THE IRON AGE

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Distribution of Rolled Steel by States

Figures of Shipments of United States Steel Corporation for Three Recent Years Show Also Extent of Cross-Currents

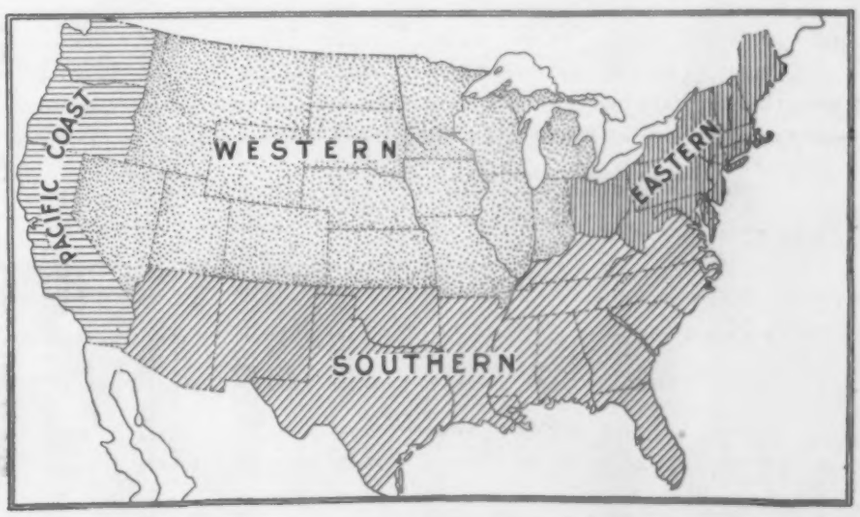
FOR the first time in any comprehensive way there are here published data as to the amounts of rolled steel consumed in the different parts of the United States. The figures cover all the principal forms of steel save pipe. They show distribution by states grouped in four sections, as marked on the accompanying map.

Though the Western section in the years 1919, 1920 and 1921 produced 30 tons of steel to every 100 tons produced in the Eastern section apparently it used about 80 tons for every 100 tons consumed in the Eastern section. The Southern district, making 5 tons to every 100 tons in the Eastern district, appeared to consume 20 per cent of the amount used in the Eastern district. Also the Pacific Coast, making 1 ton per 100 in the Eastern section used 10.

Comparing production with capacity, by reverting to a tabulation of capacities in THE IRON AGE of Jan. 1, one finds that for every ton of steel produced there was a rated capacity of about 2 tons except in the Southern section where the ratio was only 1.36 tons of capacity to 1 ton of output. As respects the capacity of Steel Corporation plants, for 100 tons in the Eastern section there were 54 tons in the Western section against 33 tons in the Western section for all companies, both Steel Corporation and independents.

What cross-currents in general occurred in the years mentioned are shown in accompanying diagrams

PRODUCTION AND CONSUMPTION OF STEEL IN EACH OF THE FOUR SECTIONS OF THE UNITED STATES



	For Every 100 Tons Produced in Eastern Section in the Years Stated, Other Districts Produced the Amounts Given			Number of Tons Rated Capacity per Ton of Production, in 1919, 1920, 1921	Shipments* of U. S. Steel Corporation (Not Including Tubular Goods) for Every 100 Tons Sent Into Eastern District			Rated Capacity of Districts, Eastern Put at 100, Not Including Tubular Goods	
	1919	1920	1921		1919	1920	1921	Whole Industry	Steel Corporation
Eastern	100	100	100	1.88	100	100	100	100	100
Western	26	29	33	1.93	78	77	87	33	54
Southern	5	5	6	1.36	22	20	28	4.3	8
Pacific	1	1	1	2.05	13	8	10	1.4	0

*Table does not show shipments to foreign countries, which were, for every 100 tons shipped into the Eastern section, 42 tons in 1919, 35 tons in 1920 and 27 tons in 1921.

Carnegie Steel Co.: Tonnage of Rolled and Finished Steel Products Shipped to Customers in 1919

States	Total G. T.	Blooms, Slabs and Billets G. T.	Sheet Bars G. T.	Rails, Heavy G. T.	Rails, Light G. T.	Heavy Structural Shapes G. T.	Plates G. T.	Bars G. T.	Track Accessories G. T.	Other Mill Products G. T.
EASTERN										
Conn.	34,123	1,446	.....	5	21	1,419	1,921	24,511	5	4,744
Del.	11,365	.....	7,417	28	2	176	644	324	1,071	1,698
D. C.	5,155	.....	134	229	5	291	173	1,157	2	3,162
Me.	10,592	.....	.....	3	2	1,800	5,607	2,533	.....	637
Md.	40,141	6	203	2,653	102	10,851	9,586	12,896	1,107	2,142
Mass.	66,289	13,452	.....	94	107	5,571	7,438	30,471	15	8,967
N. H.	2,615	.....	.....	.....	2	191	598	999	.....	825
N. J.	226,082	109	.....	42	136	32,190	131,082	41,503	1,226	18,927
N. Y.	159,474	3,336	.....	1,126	197	16,922	16,440	91,366	970	27,660
Ohio	634,888	13,406	122,894	17,255	1,914	58,817	62,724	321,278	3,129	24,359
Pa.	1,520,571	235,731	243,880	35,050	10,736	119,344	341,346	396,232	12,138	69,492
R. I.	10,667	.....	.....	39	11	401	73	8,149	3	1,861
Vt.	1,385	.....	.....	20	2	127	95	1,044	.....	97
W. Va.	215,189	9,894	174,702	6,205	6,100	2,134	4,295	8,175	977	1,707
Total Eastern	2,938,526	277,380	549,230	62,749	19,337	250,234	582,022	940,638	20,643	166,278
WESTERN										
Colo.	536	.....	.....	.....	.....	59	.....	92	.....	385
Idaho	128	.....	.....	.....	.....	1	.....	.....	.....	127
Ill.	43,086	.....	.....	1,869	.....	4,241	2,379	17,198	140	16,968
Ind.	46,668	.....	.....	10,006	22	6,386	3,831	17,245	266	8,862
Iowa	808	.....	.....	.....	.....	.....	137	91	.....	490
Kan.	2,389	.....	.....	.....	.....	534	895	440	.....	520
Mich.	214,944	.....	1,014	1,305	87	24,763	20,870	157,019	219	9,284
Minn.	7,508	.....	.....	.....	.....	1,594	4,088	1,001	2	776
Mo.	9,204	.....	.....	.....	20	984	1,617	3,621	12	2,948
Mont.	82	.....	.....	.....	.....	35	.....	9	.....	20
Neb.	566	.....	.....	.....	.....	36	.....	.....	.....	530
Nev.	44	.....	.....	.....	.....	.....	.....	33	.....	11
N. D.	4	.....	.....	.....	.....	.....	.....	.....	.....	4
S. D.	72	.....	.....	.....	.....	.....	.....	59	6	7
Utah	189	.....	.....	.....	.....	26	3	110	2	48
Wis.	9,109	.....	.....	.....	.....	569	4,527	1,983	53	1,977
Wyo.	98	.....	.....	.....	.....	2	.....	38	.....	58
Total Western	335,435	.....	1,014	13,180	129	39,230	38,347	198,939	700	43,015
SOUTHERN										
Ala.	6,113	.....	.....	321	9	2,738	544	206	51	2,213
Ariz.	228	.....	.....	.....	.....	6	1	149	.....	26
Ark.	1,321	.....	.....	.....	.....	.....	.....	316	43	880
Fla.	5,727	.....	.....	.....	.....	4,247	774	159	60	450
Ga.	6,048	.....	.....	.....	.....	915	1,266	185	528	3,105
Ky.	9,890	.....	.....	435	1,708	782	553	2,083	1,772	2,485
La.	4,897	.....	.....	58	2	847	731	1,179	197	1,744
Miss.	1,634	.....	.....	.....	.....	96	134	23	.....	1,381
N. M.	27	.....	.....	.....	.....	.....	.....	26	.....	1
N. C.	4,848	.....	.....	.....	29	237	77	1,189	170	2,721
Okla.	674	.....	.....	.....	.....	47	25	359	117	126
S. C.	2,250	.....	.....	.....	12	90	212	700	17	1,114
Tenn.	10,532	.....	.....	3	35	1,738	4,308	1,366	15	3,030
Tex.	23,067	.....	.....	.....	5	5,233	3,210	5,478	3,463	5,126
Va.	70,562	1,003	344	12,666	427	5,042	35,040	6,878	509	8,552
Total Southern	147,818	1,003	344	13,483	2,227	22,018	46,875	20,296	6,942	32,954
PACIFIC COAST										
Cal.	39,765	.....	.....	.....	.....	13,861	19,387	1,452	961	4,104
Ore.	13,201	.....	.....	.....	.....	1,111	11,303	53	.....	734
Wash.	29,747	.....	.....	.....	.....	6,599	20,964	1,268	1	915
Total Pacific Coast	82,713	.....	.....	.....	.....	21,571	51,654	2,773	962	5,753
Total within United States	3,504,492	278,383	550,588	89,412	21,693	333,053	718,898	1,162,646	29,247	248,000
To Foreign Countries	728,623	5,387	6,330	150,457	25,112	92,914	203,741	159,465	12,796	31,536
Grand Total	4,233,115*	283,770	556,918	239,869	46,805	425,967	922,639	1,322,111	42,043	279,536

*Includes 2902 tons of ingots, 77,836 tons of skelp and 32,719 tons of shapes prepared for fabrication.

Carnegie Steel Co.: Tonnage of Rolled and Finished Steel Products Shipped to Customers in 1920

States	Total G. T.	Blooms, Slabs and Billets G. T.	Sheet Bars G. T.	Rails, Heavy G. T.	Rails, Light G. T.	Bars G. T.	Heavy Structural Shapes G. T.	Plates G. T.	Track Accessories G. T.	Other Mill Products G. T.
EASTERN										
Conn.	22,290	1,940	.....	19	9	14,558	662	310	1	4,643
Del.	14,276	.....	9,244	50	.....	743	74	33	503	3,628
D. C.	1,636	.....	.....	438	.....	270	329	136	59	404
Me.	13,347	.....	.....	112	7	2,180	2,935	7,568	9	533
Md.	81,159	.....	45	21,973	293	16,207	16,315	18,252	1,743	6,120
Mass.	58,199	3,089	.....	204	54	28,260	9,106	8,024	31	9,340
N. H.	1,849	.....	.....	.....	.....	485	392	75	.....	897
N. J.	174,096	51	.....	8,885	162	37,466	31,278	76,821	543	18,168
N. Y.	164,211	864	.....	8,041	532	77,473	24,183	19,906	823	30,121
Ohio	698,524	15,166	159,748	36,681	5,382	315,798	43,596	77,393	3,849	22,051
Pa.	2,184,233	225,732	294,677	96,681	21,770	593,890	222,320	543,290	10,137	99,880
R. I.	9,700	.....	.....	33	11	7,153	540	113	112	1,738
Vt.	1,259	.....	.....	2	6	1,066	100	41	.....	44
W. Va.	284,861	745	183,552	49,407	17,264	11,554	2,844	9,222	3,035	2,286
Total Eastern	3,709,640	247,587	647,266	222,526	45,490	1,107,103	354,674	761,184	20,845	199,853
WESTERN										
Colo.	480	.....	.....	.....	.....	26	168	.....	.....	286
Idaho	36	.....	.....	.....	.....	.....	.....	.....	.....	36
Ill.	41,059	.....	.....	690	.....	19,284	2,142	1,049	348	16,800
Ind.	22,004	.....	.....	1,900	71	13,658	2,057	62	407	3,741
Iowa	854	.....	.....	.....	.....	162	.....	19	.....	673
Kan.	1,126	.....	.....	.....	.....	210	765	54	.....	97
Mich.	179,542	.....	.....	1,790	69	130,872	11,090	25,171	129	10,389
Minn.	2,100	.....	.....	3	.....	542	181	255	.....	1,109
Mo.	9,412	.....	.....	.....	.....	4,509	692	52	23	4,123
Mont.	3	.....	.....	.....	.....	.....	.....	.....	.....	3
Neb.	72	.....	.....	.....	.....	2	4	.....	.....	66
Nev.	35	.....	.....	.....	.....	10	.....	.....	.....	25
N. D.	1	.....	.....	.....	.....	1	.....	.....	.....	.....
S. D.	3	.....	.....	.....	.....	3	.....	.....	.....	.....
Utah	38	.....	.....	.....	.....	.....	33	.....	.....	5
Wis.	5,989	.....	.....	.....	139	1,153	63	110	6	3,360
Wyo.	295	.....	.....	.....	.....	6	8	10	.....	271
Total Western	263,049	.....	.....	4,383	279	170,438	17,203	26,782	913	40,984

States SOUTHERN	Total G. T.	Blooms, Slabs and Billets G. T.	Sheet Bars G. T.	Rails, Heavy G. T.	Rails, Light G. T.	Bars G. T.	Heavy Structural Shapes G. T.	Plates G. T.	Track Accessories G. T.	Other Mill Products G. T.
Ala.	5,192	.....	.....	5	.....	261	1,141	310	109	3,016
Ariz.	58	.....	.....	.....	.....	1	16	.....	.....	41
Ark.	892	.....	.....	.....	.....	71	1	1	37	782
Fla.	3,860	.....	.....	.....	1	146	2,261	282	.....	1,170
Ga.	4,021	.....	.....	.....	.....	233	194	289	85	3,218
Ky.	11,931	.....	.....	1,602	2,194	964	139	298	2,210	4,495
La.	4,835	.....	.....	.....	.....	669	214	316	.....	3,548
Miss.	1,971	.....	.....	.....	.....	16	162	36	24	1,733
N. M.	101	.....	.....	.....	.....	.....	4	1	94	1
N. C.	6,291	.....	.....	637	20	1,048	524	209	249	3,332
Okla.	350	.....	.....	.....	.....	157	5	27	.....	120
S. C.	2,671	.....	.....	529	3	629	76	21	57	1,277
Tenn.	12,134	.....	.....	1,520	41	988	4,316	680	906	3,562
Tex.	21,067	1	.....	.....	3	7,428	3,950	912	13	8,496
Va.	79,283	.....	1,181	11,805	2,052	10,531	20,037	19,299	562	13,700
Total Southern.....	154,657	1	1,181	16,098	4,314	23,142	33,040	22,681	4,346	48,491
PACIFIC COAST										
Cal.	34,524	.....	.....	.....	.....	3,272	5,919	13,086	.....	12,226
Ore.	4,795	.....	.....	.....	.....	1,691	2,688	314	.....	102
Wash.	3,260	.....	.....	.....	.....	69	2,022	819	.....	350
Total Pacific Coast.	42,579	.....	.....	.....	.....	5,032	10,629	14,219	.....	12,678
Total within United States	4,169,925	247,588	648,447	243,007	50,083	1,305,715	415,546	824,866	26,104	302,006
To Foreign Countries	490,565	1	.....	62,466	17,167	128,273	101,729	116,194	7,730	16,143
Grand Total.....	4,660,490*	247,589	648,447	305,473	67,250	1,433,988	517,275	941,060	33,834	318,149

*Includes 2,945 tons of ingots, 106,373 tons of skelp and 38,107 tons of semi-fabricated shapes.

Carnegie Steel Co.: Tonnage of Rolled and Finished Steel Products Shipped to Customers in 1921

States EASTERN	Total G. T.	Blooms, Slabs and Billets G. T.	Sheet Bars G. T.	Rails, Heavy G. T.	Rails, Light G. T.	Bars G. T.	Heavy Structural Shapes G. T.	Plates G. T.	Track Accessories G. T.	Other Mill Products G. T.
Conn.	10,028	.....	.....	8	3	6,543	166	81	.....	3,204
Del.	3,358	.....	1,158	.....	.....	482	429	149	371	769
D. C.	2,445	.....	.....	11	.....	454	309	439	2	1,230
Me.	5,591	.....	.....	1,287	61	1,031	513	1,818	285	590
Md.	34,468	.....	.....	9,087	262	6,199	4,691	8,080	458	5,044
Mass.	41,976	1,064	97	194	11	15,123	4,658	12,956	73	7,797
N. H.	1,915	82	203	15	18	358	307	193	2	735
N. J.	62,229	135	.....	2,795	69	17,922	6,017	21,942	611	12,213
N. Y.	108,213	714	.....	9,911	440	44,908	12,234	13,146	1,175	24,018
Ohio	273,823	14,917	37,165	29,114	4,729	108,446	20,021	35,713	2,860	15,844
Pa.	1,018,382	69,454	201,235	98,763	29,530	171,742	69,899	227,349	9,403	46,383
R. I.	7,279	.....	.....	.....	6	2,946	445	2,089	7	1,786
Vt.	767	.....	.....	.....	.....	687	57	18	.....	4
W. Va.	126,942	101	24,856	54,939	14,030	6,376	4,065	6,830	6,602	2,942
Total Eastern.....	1,697,416	86,467	264,714	206,124	49,159	383,217	123,810	330,803	21,849	122,559
WESTERN										
Colo.	588	.....	.....	.....	.....	8	152	2	.....	425
Idaho	48	.....	.....	.....	.....	.....	.....	.....	.....	48
Ill.	21,198	.....	.....	2,231	.....	3,536	3,709	730	277	10,692
Ind.	7,823	.....	.....	1,195	5	2,378	1,139	157	481	1,468
Iowa	1,134	.....	.....	.....	.....	94	204	.....	.....	836
Kan.	612	.....	.....	.....	.....	16	321	224	.....	51
Mich.	76,840	.....	.....	.....	.....	50,818	2,968	2,781	7	19,266
Minn.	1,391	.....	.....	.....	.....	354	219	150	.....	668
Mo.	4,479	.....	.....	.....	2	932	1,377	267	7	1,892
Mont.	4	.....	.....	.....	.....	1	.....	.....	.....	3
Neb.	26	.....	.....	.....	.....	16	.....	.....	.....	10
Nev.	4	.....	.....	.....	.....	4	.....	.....	.....	.....
N. D.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
S. D.	5	.....	.....	.....	.....	4	.....	.....	.....	1
Utah	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Wis.	2,324	.....	.....	.....	.....	684	494	.....	.....	1,144
Wyo.	272	.....	.....	.....	.....	2	.....	.....	.....	270
Total Western.....	116,748	.....	.....	3,426	7	59,847	11,583	4,311	772	36,774
SOUTHERN										
Ala.	2,449	.....	.....	.....	.....	52	417	28	109	1,841
Ariz.	82	.....	.....	.....	.....	4	.....	43	.....	31
Ark.	1,681	.....	.....	.....	.....	3	.....	5	.....	1,664
Fla.	1,331	.....	.....	.....	.....	24	203	31	395	687
Ga.	1,722	.....	.....	.....	.....	71	47	.....	383	1,221
Ky.	7,353	.....	.....	1,609	2,695	591	209	134	482	1,459
La.	2,771	.....	.....	.....	.....	202	131	37	16	2,367
Miss.	1,821	.....	.....	.....	.....	1	.....	.....	220	1,400
N. M.	2	.....	.....	.....	.....	2	.....	.....	.....	.....
N. C.	4,043	.....	.....	.....	3	1,757	109	37	615	1,443
Okla.	979	40	.....	.....	.....	147	118	.....	.....	674
S. C.	1,267	.....	.....	.....	.....	336	49	5	377	468
Tenn.	3,514	.....	.....	.....	25	286	1,010	336	431	1,426
Tex.	13,774	23	.....	.....	.....	5,727	3,007	1,903	3	2,847
Va.	46,456	8	.....	7,338	1,512	5,686	5,062	16,168	299	10,342
Total Southern.....	89,045	71	.....	8,947	4,235	14,889	10,362	18,727	3,330	27,854
PACIFIC COAST										
Cal.	30,098	.....	.....	512	5	6,498	5,393	13,033	.....	4,620
Ore.	715	.....	.....	.....	.....	172	204	113	.....	221
Wash.	4,594	.....	.....	.....	.....	753	1,030	2,506	.....	305
Total Pacific Coast.	35,407	.....	.....	512	5	7,423	6,627	15,657	.....	5,156
Total within United States	1,938,616	86,538	264,714	219,009	53,406	465,376	152,383	369,493	25,951	192,342
To Foreign Countries	295,072	446	824	62,536	4,597	48,376	46,525	68,158	8,546	11,143
Grand Total.....	2,233,688*	86,984	265,538	281,545	58,003	513,752	198,907	437,656	34,497	203,486

*Includes 1536 tons of ingots, 130,685 tons of skelp and 21,099 tons of semi-fabricated shapes.

Illinois Steel Co.: Tonnage of Rolled and Finished Steel Products Shipped to Customers in 1919

States	Total G. T.	Blooms, Slabs and Billets G. T.	Sheet Bars G. T.	Rails, Heavy G. T.	Rails, Light G. T.	Heavy Structural Shapes G. T.	Plates G. T.	Bars G. T.	Track Accessories G. T.	Other Mill Products G. T.
EASTERN										
Conn.	590	53	.....	.....	.....	.....	.....	502	.....	35
Del.	436	.....	.....	.....	.....	.....	.....	.....	436	.....
D. C.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Me.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Md.	41	.....	.....	.....	.....	4	.....	.....	36	.....
Mass.	533	.....	.....	.....	.....	.....	.....	231	98	204
N. H.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
N. J.	2,669	.....	.....	.....	.....	.....	2,509	121	17	22
N. Y.	1,928	34	.....	135	.....	17	112	1,156	20	487
Ohio	38,233	1,485	.....	13,249	2,542	820	2,462	10,711	4,359	2,322
Pa.	3,485	55	.....	286	108	53	165	88	1,022	1,687
R. I.	4	.....	.....	.....	.....	.....	.....	.....	.....	.....
Vt.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
W. Va.	7,442	.....	.....	5,815	86	30	.....	27	1,278	149
Total Eastern	55,361	1,627	.....	19,485	2,736	890	5,248	12,836	7,266	4,906
WESTERN										
Colo.	5,806	378	.....	.....	197	2,142	690	318	1,737	344
Idaho	2,239	.....	.....	62	51	37	112	148	1,703	126
Ill.	769,365	30,521	.....	278,953	8,546	90,846	103,141	160,083	64,465	31,197
Ind.	251,581	18,001	7	12,284	2,290	51,076	55,862	97,594	4,553	8,909
Iowa	44,466	9	.....	22,875	298	4,300	5,996	8,459	1,035	1,277
Kan.	46,108	54	.....	23,856	591	5,761	9,924	1,796	3,659	414
Mich.	63,005	188	.....	5,277	1,026	8,825	7,551	33,467	3,915	2,594
Minn.	152,701	369	.....	96,944	267	11,949	9,205	15,833	14,932	3,104
Mo.	99,157	.....	.....	26,954	881	20,814	12,043	20,250	13,749	4,406
Mont.	2,915	.....	.....	745	440	178	240	94	1,143	72
Neb.	72,991	87	.....	52,421	.....	752	330	1,791	17,115	480
Nev.	955	.....	.....	.....	73	1	122	4	754	1
N. D.	2,984	.....	.....	1,955	102	2	.....	278	607	38
S. D.	1,551	.....	.....	.....	140	.....	.....	232	1,107	30
Utah	3,148	.....	.....	.....	280	703	775	40	1,279	70
Wis.	137,764	2,673	.....	7,910	185	16,755	27,974	73,747	1,085	7,131
Wyo.	3,049	45	.....	160	402	174	55	222	1,337	654
Total Western	1,659,785	52,325	7	530,396	15,769	214,315	234,020	414,356	134,175	60,847
SOUTHERN										
Ala.	7,128	3	.....	3,548	336	1,173	301	381	1,175	200
Ariz.	3,226	.....	.....	24	252	207	163	98	2,479	3
Ark.	4,275	.....	.....	2,163	329	240	49	659	713	120
Fla.	310	.....	.....	.....	.....	98	30	55	37	90
Ga.	2,284	.....	.....	758	.....	582	8	31	865	38
Ky.	14,603	90	.....	8,666	839	603	575	1,760	1,951	103
La.	6,265	52	.....	1,005	52	1,117	566	424	2,596	358
Miss.	1,731	32	.....	745	430	95	91	69	203	66
N. M.	395	.....	.....	.....	27	114	6	224	8	16
N. C.	1,935	.....	.....	149	.....	.....	.....	.....	1,786	.....
Okla.	11,551	347	.....	2,527	252	1,560	2,233	4,063	392	126
S. C.	98	.....	.....	.....	.....	.....	.....	.....	89	1
Tenn.	5,156	.....	.....	1,998	111	1,661	407	271	498	138
Tex.	14,747	191	.....	5,042	245	1,414	827	2,767	3,959	255
Va.	1,211	.....	.....	605	.....	.....	.....	236	320	3
Total Southern	74,915	715	.....	27,230	2,873	8,864	5,256	11,038	17,071	1,517
PACIFIC COAST										
Alaska	621	.....	.....	548	39	1	.....	23	10	.....
Cal.	128,232	109	.....	172	722	21,510	94,654	5,446	5,292	327
Ore.	30,155	.....	.....	1,628	165	5,293	20,272	1,747	1,012	38
Wash.	47,934	254	.....	1,129	236	7,464	34,139	2,733	1,841	138
Total Pacific Coast	206,942	363	.....	3,477	1,162	34,268	149,065	9,949	8,155	503
Total within United States	1,997,003	55,030	7	580,588	22,540	258,337	393,589	448,179	166,667	67,773
To Foreign Countries	224,381	13,769	2,792	45,612	26,873	11,824	79,889	31,349	11,977	278
Grand Total	2,221,384*	68,799	2,799	626,200	49,413	270,161	473,478	479,528	178,644	68,051

*Includes 140 tons of ingots and 4171 tons of semi-fabricated shapes.

Illinois Steel Co.: Tonnage of Rolled and Finished Steel Products Shipped to Customers in 1920

States	Total G. T.	Blooms, Slabs and Billets G. T.	Sheet Bars G. T.	Rails, Heavy G. T.	Rails, Light G. T.	Heavy Structural Shapes G. T.	Plates G. T.	Bars G. T.	Track Accessories G. T.	Other Mill Products G. T.
EASTERN										
Conn.	1,860	1,014	.....	.....	.....	.....	.....	831	2	13
Del.	3	.....	.....	.....	.....	.....	.....	.....	.....	3
D. C.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Me.	1	.....	.....	.....	.....	.....	.....	.....	.....	1
Md.	4,532	.....	.....	2,312	.....	2	.....	.....	2,210	8
Mass.	168	.....	.....	.....	19	.....	.....	76	41	32
N. H.	36	.....	.....	.....	.....	.....	.....	.....	.....	36
N. J.	1,715	.....	.....	.....	.....	.....	1,178	137	4	396
N. Y.	3,798	937	.....	355	.....	16	78	1,732	117	586
Ohio	97,255	6,109	.....	38,965	6,168	584	2,465	17,096	11,703	14,102
Pa.	10,718	4	.....	5,471	437	4	7	15	3,377	1,427
R. I.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Vt.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
W. V.	6,704	.....	.....	3,791	1,316	.....	.....	68	1,342	150
Total Eastern	126,785	8,064	.....	50,894	7,940	574	3,728	19,925	18,796	16,754
WESTERN										
Colo.	6,177	3	.....	.....	306	2,389	1,149	163	597	1,061
Idaho	11,355	.....	.....	7,565	76	31	583	12	2,756	332
Ill.	1,062,049	42,268	.....	234,767	24,083	122,089	182,760	301,325	98,808	53,625
Ind.	532,314	32,348	2	67,300	8,872	70,765	115,026	203,291	13,704	20,276
Iowa	30,872	.....	.....	3,321	1,032	4,835	5,860	9,674	3,815	2,215
Kan.	52,051	.....	.....	9,862	1,292	9,933	15,737	3,599	9,717	1,900
Mich.	134,866	95	.....	16,657	1,812	13,785	38,355	52,861	6,356	4,784
Minn.	115,721	344	.....	39,906	1,377	15,691	14,517	15,247	24,951	3,625
Mo.	150,106	46	.....	30,337	1,940	30,993	18,969	33,772	28,681	5,294
Mont.	1,850	.....	.....	210	506	181	556	34	255	108
Neb.	34,280	.....	.....	18,838	.....	1,768	1,367	3,265	7,116	1,870
Nev.	2,380	.....	.....	.....	4	38	148	51	2,011	128
N. D.	2,160	.....	.....	1,856	107	.....	.....	14	169	14
S. D.	1,251	.....	.....	24	20	53	53	61	1,014	26
Utah	4,482	.....	.....	117	2,638	460	614	45	339	197
Wis.	209,913	2,570	.....	9,754	594	25,439	32,718	123,855	3,649	10,868
Wyo.	5,036	27	.....	36	847	1,117	384	65	1,174	1,385
Total Western	2,356,863	77,701	2	440,550	46,006	299,567	428,796	747,334	205,112	107,708

States SOUTHERN	Total G. T.	Blooms, Slabs and Billets G. T.	Sheet Bars G. T.	Rails, Heavy G. T.	Rails, Light G. T.	Heavy Structural Shapes G. T.	Plates G. T.	Bars G. T.	Track Acces-sories G. T.	Other Mill Products G. T.
Ala.	10,652	.....	.....	301	1,653	2,225	216	307	5,358	572
Ariz.	811	1	.....	.....	115	48	182	202	212	45
Ark.	5,575	.....	.....	1,139	585	99	432	1,457	1,475	366
Fla.	244	.....	.....	.....	39	.....	.....	.....	61	144
Ga.	2,642	.....	.....	.....	7	50	.....	43	2,291	251
Ky.	24,284	.....	.....	4,508	8,273	766	1,923	5,448	2,894	450
La.	13,008	.....	.....	918	542	2,211	1,125	447	6,796	905
Miss.	744	.....	.....	76	83	28	.....	.....	359	198
N. M.	8,744	.....	.....	137	45	1,914	330	297	5,823	192
N. C.	616	.....	.....	.....	78	.....	.....	.....	432	106
Okla.	21,165	1,249	.....	6,141	933	1,539	3,352	7,046	768	136
S. C.	81	.....	.....	.....	19	4	.....	3	3	29
Tenn.	11,788	.....	.....	1,299	595	4,703	2,255	967	1,362	543
Tex.	24,326	195	.....	593	100	2,698	2,461	5,375	12,021	862
Va.	5,465	.....	.....	4,574	125	88	60	367	210	44
Total Southern.....	130,148	1,445	.....	19,686	13,192	16,373	12,336	21,959	40,070	4,852
PACIFIC COAST										
Alaska	7,712	.....	.....	6,843	.....	.....	.....	.....	869	.....
Cal.	75,495	156	.....	99	1,026	19,870	44,783	2,923	5,980	655
Ore.	30,760	.....	.....	3,194	324	4,580	20,374	572	1,514	202
Wash.	29,499	43	.....	7,218	483	5,729	11,722	894	3,298	112
Total Pacific Coast.	143,466	199	.....	17,354	1,833	30,179	76,879	4,389	11,661	969
Total within United States	2,757,262	87,409	2	528,484	68,971	346,693	521,739	793,607	275,639	130,283
To Foreign Countries	206,641	1,078	3,000	11,646	39,968	25,193	84,371	28,749	11,968	648
Grand Total.....	2,963,903*	88,487	3,002	540,130	108,939	371,886	606,110	822,356	287,607	130,931

*Includes 198 tons of ingots and 4257 tons of shapes prepared for fabrication.

Illinois Steel Co.: Tonnage of Rolled and Finished Steel Products Shipped to Customers in 1921

States EASTERN	Total G. T.	Blooms, Slabs and Billets G. T.	Sheet Bars G. T.	Rails, Heavy G. T.	Rails, Light G. T.	Heavy Structural Shapes G. T.	Plates G. T.	Bars G. T.	Track Acces-sories G. T.	Other Mill Products G. T.
Conn.	23	.....	.....	.....	.....	.....	.....	.....	.....	23
Del.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
D. C.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Me.	4	.....	.....	.....	.....	.....	.....	.....	4	.....
Md.	1,956	.....	.....	164	.....	1	.....	.....	1,791	.....
Mass.	362	.....	.....	.....	.....	.....	209	5	114	34
N. H.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
N. J.	402	.....	.....	.....	.....	.....	8	.....	3	391
N. Y.	2,907	55	.....	1,561	.....	1	146	68	480	596
Ohio	46,056	184	.....	33,060	519	284	717	777	10,129	296
Pa.	7,810	.....	.....	4,718	4	5	159	25	2,416	527
R. I.	120	.....	.....	.....	.....	.....	.....	.....	.....	120
Vt.	11	.....	.....	.....	.....	.....	.....	.....	11	.....
W. Va.	13,610	.....	.....	12,281	90	8	.....	62	1,174	.....
Total Eastern.....	73,261	239	.....	51,784	613	294	1,239	887	16,122	1,987
WESTERN										
Colo.	5,614	73	.....	.....	245	2,134	559	723	1,383	491
Idaho	12,374	.....	.....	7,460	.....	20	315	6	4,533	40
Ill.	574,654	9,990	.....	238,047	14,653	56,817	89,253	93,019	53,451	16,843
Ind.	324,031	16,941	5,249	124,038	4,658	32,708	53,269	60,000	16,257	7,334
Iowa	29,333	56	.....	20,034	253	4,080	1,846	2,086	1,084	210
Kan.	39,358	2	.....	9,596	586	7,109	13,064	1,582	6,506	913
Mich.	51,666	26	.....	7,211	885	5,621	10,708	23,015	3,236	511
Minn.	91,834	214	.....	50,955	347	8,448	5,003	8,669	16,703	1,471
Mo.	107,224	20	.....	41,988	947	19,042	16,427	10,649	15,572	2,526
Mont.	2,431	.....	.....	1,618	644	32	64	14	59	.....
Neb.	62,981	13	.....	40,394	3	777	705	1,006	19,433	650
Nev.	3,611	.....	.....	.....	127	.....	103	.....	3,381	.....
N. D.	8,303	.....	.....	7,708	78	5	.....	16	496	.....
S. D.	517	.....	.....	.....	199	103	33	165	9	1
Utah	3,025	.....	.....	.....	89	305	388	88	2,115	40
Wis.	83,837	493	13,473	22,544	167	9,395	6,937	26,794	1,862	1,973
Wyo.	4,468	127	.....	2	861	1,299	939	411	673	156
Total Western.....	1,405,261	27,955	18,722	571,595	24,742	147,895	199,213	228,243	146,753	33,159
SOUTHERN										
Ala.	3,011	.....	.....	79	235	296	58	116	2,219	4
Ariz.	434	.....	.....	.....	24	72	48	95	114	81
Ark.	6,980	1	.....	4,889	289	82	114	266	1,302	.....
Fla.	39	.....	.....	.....	.....	36	1	.....	2	.....
Ga.	1,757	.....	.....	.....	.....	.....	7	28	1,717	5
Ky.	13,530	.....	.....	4,510	2,651	737	306	565	4,721	10
La.	5,731	8	.....	525	21	463	66	171	4,418	37
Miss.	1,624	.....	.....	.....	.....	22	10	.....	1,562	28
N. M.	17,651	.....	.....	2,525	148	78	588	.....	12,418	1,894
N. C.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Okla.	24,928	59	.....	18,897	541	2,364	777	1,320	948	1
S. C.	53	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tenn.	3,295	5	.....	223	25	999	453	261	1,188	26
Tex.	16,132	28	.....	5,546	39	1,817	1,605	1,041	5,475	558
Va.	6,531	.....	.....	6,171	.....	.....	73	.....	157	130
Total Southern.....	101,696	101	.....	43,465	3,973	6,966	4,106	3,863	36,233	2,774
PACIFIC COAST										
Alaska	337	.....	.....	.....	.....	.....	.....	.....	332	5
Cal.	11,684	.....	.....	8	339	2,484	2,771	789	2,909	1,327
Ore.	9,756	.....	.....	6,852	185	208	178	.....	2,135	198
Wash.	6,667	.....	.....	4,108	270	287	380	621	816	205
Total Pacific Coast.	28,414	.....	.....	10,968	794	2,979	4,309	1,410	6,192	1,735
Total within United States	1,608,632	28,295	18,722	677,812	30,122	158,134	208,867	234,403	205,300	39,655
To Foreign Countries	93,658	258	.....	8,001	8,717	15,245	42,017	14,463	3,887	70
Grand Total.....	1,702,290*	28,553	18,722	685,813	38,839	173,379	251,884	248,866	209,187	39,725

*Includes 112 tons of ingots and 7210 tons of semi-fabricated shapes.

Tennessee Coal, Iron & Railroad Co.: Tonnage of Rolled and Finished Steel Products Shipped to Customers in 1919

States	Total G.T.	Blooms, Slabs and Billets G.T.	Rails, Heavy G.T.	Rails, Light G.T.	Heavy Structural Shapes G.T.	Plates G.T.	Bars G.T.	Track Accessories G.T.	Other Mill Products G.T.
EASTERN									
Md.	33	.....	.....	.....	.....	32	.....	.....	1
N. J.	342	.....	.....	.....	.....	.....	281	.....	61
N. Y.	500	.....	.....	.....	.....	.....	495	.....	5
Ohio	38	41	.....	.....	.....	.....	.....	.....	79
Pa.	733	.....	512	.....	.....	1	213	.....	7
W. Va.	3	.....	.....	.....	.....	.....	.....	.....	3
Total Eastern	1,649	41	512	.....	.....	33	989	.....	156
WESTERN									
Colo.	41	.....	.....	.....	34	.....	5	.....	2
Idaho	1	.....	.....	.....	.....	.....	.....	.....	1
Ill.	5,161	.....	5,133	.....	.....	11	.....	.....	17
Ind.	300	.....	300	.....	.....	.....	.....	.....	.....
Kan.	1,638	.....	1,637	.....	.....	.....	.....	.....	1
Mich.	1	.....	.....	.....	.....	.....	.....	.....	1
Minn.	21	.....	.....	.....	.....	.....	.....	.....	21
Mo.	2,097	.....	1,698	.....	.....	297	.....	.....	102
Mont.	1	.....	.....	.....	.....	.....	.....	.....	1
Utah	40	.....	.....	.....	.....	.....	39	.....	1
Wis.	8	.....	.....	.....	.....	.....	.....	.....	8
Total Western	9,309	.....	8,768	.....	34	308	44	.....	155
SOUTHERN									
Ala.	106,757	4,284	48,411	2,668	8,466	25,632	17,091	14	185
Ariz.	139	.....	.....	.....	.....	56	62	.....	21
Ark.	3,574	.....	3,276	.....	.....	.....	285	.....	13
Fla.	14,136	2	500	135	1,284	10,433	1,769	1	12
Ga.	43,508	.....	26,822	20	1,027	8,896	6,693	1	49
Ky.	11,011	32	10,397	46	1	354	174	2	5
La.	22,766	.....	13,108	79	412	3,224	5,927	6	10
Miss.	13,639	19	6,833	282	620	5,237	625	12	11
N. C.	1,088	.....	1	.....	121	250	709	.....	7
Okla.	8,147	533	6,866	.....	.....	26	717	.....	5
S. C.	6,110	.....	5,850	.....	47	67	141	.....	5
Tenn.	49,466	1,922	32,109	84	2,087	9,175	3,995	1	93
Tex.	75,237	137	64,590	.....	91	7,775	2,609	.....	35
Va.	1,392	.....	54	.....	185	851	301	.....	1
Total Southern	356,970	6,929	218,817	3,314	14,341	71,976	41,098	37	452
PACIFIC COAST									
Cal.	117	.....	.....	.....	.....	117	.....	.....	.....
Ore.	5	.....	.....	.....	.....	.....	1	.....	4
Wash.	28	.....	49	.....	.....	.....	14	.....	7
Total Pacific Coast	94	.....	49	.....	.....	117	15	.....	11
Total Within United States	368,022	6,888	228,048	3,314	14,375	72,434	42,146	37	774
To Foreign Countries	147,883	18,328	68,192	3,353	318	45,439	4,378	136	7,739
Grand Total	515,905	25,216	296,240	6,667	14,693	117,873	46,524	173	8,513

Tennessee Coal, Iron & Railroad Co.: Tonnage of Rolled and Finished Steel Products Shipped to Customers in 1920

EASTERN	Total G.T.	Blooms, Slabs and Billets G.T.	Rails, Heavy G.T.	Rails, Light G.T.	Heavy Structural Shapes G.T.	Plates G.T.	Bars G.T.	Track Accessories G.T.	Other Mill Products G.T.
Md.	4	.....	.....	.....	.....	.....	.....	.....	4
Mass.	138	.....	.....	.....	.....	.....	138	.....	.....
N. J.	85	.....	.....	.....	.....	.....	7	.....	78
N. Y.	501	.....	.....	.....	.....	48	448	.....	5
Ohio	6,388	5,021	209	251	.....	25	780	.....	102
Pa.	564	.....	1	67	.....	.....	475	.....	21
W. Va.	565	.....	211	322	.....	.....	.....	12	20
Total Eastern	8,245	5,021	421	640	.....	73	1,848	12	230
WESTERN									
Colo.	230	.....	.....	.....	64	142	18	.....	6
Idaho	1	.....	.....	.....	.....	.....	.....	.....	1
Ill.	4,385	.....	2,843	.....	.....	21	1,366	.....	155
Ind.	4,298	.....	4,141	.....	.....	79	78	.....	.....
Iowa	347	.....	347	.....	.....	.....	.....	.....	.....
Kan.	5,359	.....	5,359	.....	.....	.....	.....	.....	.....
Mich.	124	.....	.....	.....	.....	.....	90	.....	34
Minn.	96	.....	.....	.....	.....	.....	.....	.....	96
Mo.	8,678	.....	8,557	.....	5	.....	.....	.....	116
Mont.	1	.....	.....	.....	.....	.....	1	.....	.....
Utah	30	.....	.....	.....	.....	.....	25	.....	5
Wis.	7	.....	.....	.....	.....	.....	.....	1	6
Wyo.	95	.....	.....	87	.....	.....	.....	3	5
Total Western	23,651	.....	21,247	87	69	242	1,578	4	424
SOUTHERN									
Ala.	139,447	4,002	43,308	6,406	19,263	32,554	32,224	220	418
Ariz.	206	.....	.....	.....	.....	169	35	.....	2
Ark.	18,869	.....	18,816	.....	.....	.....	20	.....	33
Fla.	13,948	4	3,612	1,157	1,232	6,761	1,117	45	20
Ga.	47,549	.....	30,432	6	1,659	7,113	8,321	1	17
Ky.	42,666	212	40,321	423	84	1,538	65	15	8
La.	33,603	.....	26,273	814	1,225	3,666	1,564	35	26
Miss.	12,841	12	10,618	999	29	224	906	41	12
N. M.	12,133	.....	12,133	.....	.....	.....	.....	.....	.....
N. C.	8,353	.....	5,976	485	103	411	1,354	19	5
Okla.	5,145	.....	5,003	.....	.....	1	139	.....	2
S. C.	7,543	.....	7,039	312	26	33	115	15	3
Tenn.	50,190	116	21,115	1,305	7,493	13,965	6,095	31	70
Tex.	20,499	218	7,845	982	1,351	6,529	3,507	30	37
Va.	1,084	.....	.....	102	21	320	637	4	.....
Total Southern	414,076	4,564	232,491	12,991	32,486	73,284	56,099	456	653

States	Total G.T.	Blooms, Slabs and Billets G.T.	Rails, Heavy G.T.	Rails, Light G.T.	Heavy Structural Shapes G.T.	Plates G.T.	Bars G.T.	Track Accessories G.T.	Other Mill Products G.T.
PACIFIC COAST									
Cal.	2,833	.....	1,951	.....	.....	882	.....	.....	.....
Ore.	44	.....	.....	37	.....	.....	.....	1	6
Wash.	49	.....	.....	.....	.....	.....	.....	.....	49
Total Pacific Coast	2,926	.....	1,951	37	.....	882	.....	1	55
Total Within United States	448,898	9,585	256,110	13,755	32,555	74,481	59,525	473	1,362
To Foreign Countries	197,841	3,016	74,292	33,021	1,659	83,691	619	1,254	289
Grand Total	646,739*	12,601	330,402	46,776	34,214	158,172	60,144	1,727	1,651

*Includes 1052 tons of ingots sold in Alabama.

Tennessee Coal, Iron & Railroad Co.: Tonnage of Rolled and Finished Steel Products Shipped to Customers in 1921

EASTERN									
N. J.	19	.....	.....	.....	.....	.....	.....	.....	19
N. Y.	3	.....	.....	.....	.....	.....	.....	.....	3
Ohio	51	5	.....	.....	.....	.....	.....	.....	56
Pa.	66	.....	57	.....	.....	.....	.....	.....	9
R. I.	2	.....	.....	.....	.....	.....	.....	.....	2
W. Va.	428	.....	.....	411	.....	.....	.....	17	.....
Total Eastern	569	5	57	411	.....	.....	.....	17	88
WESTERN									
Colo.	13	.....	.....	.....	.....	.....	.....	.....	13
Ill.	116	.....	.....	.....	.....	1	115	.....	.....
Ind.	554	.....	523	.....	9	5	17	.....	.....
Kan.	2,316	.....	2,315	.....	.....	.....	.....	.....	1
Mich.	2	.....	.....	.....	.....	.....	.....	.....	2
Minn.	9	.....	.....	.....	.....	.....	.....	.....	9
Mo.	8,694	.....	8,317	.....	255	67	21	.....	34
Mont.	2	.....	.....	.....	.....	.....	2	.....	.....
Wyo.	3	.....	.....	.....	.....	.....	.....	.....	3
Total Western	11,709	.....	11,155	.....	264	73	155	.....	62
SOUTHERN									
Ala.	58,031	3,323	23,011	1,808	5,894	10,074	13,026	290	141
Ariz.	494	.....	404	.....	13	38	39	.....	.....
Ark.	2,380	.....	146	31	6	97	48	2,038	14
Fla.	6,053	.....	50	137	808	938	1,633	2,477	10
Ga.	54,423	5	44,244	.....	1,216	1,948	2,095	4,905	10
Ky.	40,111	82	37,797	1,001	219	727	195	84	6
La.	27,856	6	23,129	82	976	1,457	2,173	25	8
Miss.	10,722	.....	9,239	91	97	131	1,082	77	5
N. M.	37,430	.....	37,384	.....	1	45	.....	.....	.....
N. C.	8,306	.....	7,025	6	136	95	1,031	5	8
Okla.	80	.....	.....	.....	1	63	16	.....	.....
S. C.	3,222	.....	2,706	.....	38	17	354	106	1
Tenn.	26,846	94	15,767	126	3,071	4,164	3,452	139	33
Tex.	22,791	53	15,052	149	1,031	2,694	2,047	1,748	17
Va.	3,135	.....	2,658	.....	89	160	225	.....	3
Total Southern	301,880	3,563	218,612	3,431	13,596	22,648	27,416	11,894	256
PACIFIC COAST									
Alaska	5,401	.....	5,401	.....	.....	.....	.....	.....	.....
Cal.	4,023	.....	3,067	.....	14	932	10	.....	.....
Ore.	5	.....	.....	.....	.....	.....	.....	.....	5
Wash.	12	.....	.....	.....	.....	.....	3	.....	9
Total Pacific Coast	9,441	.....	8,468	.....	14	922	12	.....	14
Total Within United States	323,593	3,558	238,292	3,842	13,874	23,653	27,584	11,911	415
To Foreign Countries	142,700	316	95,115	2,860	4,476	34,825	4,490	574	44
Grand Total	466,293	3,874	333,407	6,702	18,350	58,478	32,074	12,485	459

Minnesota Steel Co.: Tonnage of Rolled and Finished Steel Products Shipped to Customers in 1919

EASTERN	Total G. T.	Blooms, Slabs and Billets G. T.	Heavy Structural Shapes G. T.	Bars G. T.	Other Mill Products G. T.
Ohio	686	154	.....	532	.....
Total Eastern	686	154	.....	532	.....
WESTERN					
Ill.	22,967	5,314	1,335	16,318	.....
Ind.	15,013	1,313	2,184	11,516	.....
Iowa	615	.....	48	567	.....
Mich.	2,281	.....	.....	2,281	.....
Minn.	6,958	33	118	6,669	115
Mo.	1,400	.....	870	530	.....
Mont.	53	.....	.....	53	.....
Wis.	4,135	.....	.....	4,135	.....
Total Western	53,422	6,660	4,555	42,069	115
SOUTHERN					
Ky.	53	.....	.....	53	.....
Oklahoma	1	.....	.....	1	.....
Total Southern	54	.....	.....	54	.....
PACIFIC COAST					
Wash.	60	.....	.....	60	.....
Total Pac. Coast	60	.....	.....	60	.....
Total, within United States	54,222	6,814	4,555	42,715	115
To foreign countries	34,442	.....	.....	32,520	1,922
Grand total	88,664	6,814	4,555	75,235	2,037

Minnesota Steel Co.: Tonnage of Rolled and Finished Steel Products Shipped to Customers in 1920

EASTERN	Total G. T.	Blooms, Slabs and Billets G. T.	Sheet Bars G. T.	Heavy Structural Shapes G. T.	Bars G. T.
Ohio	1,701	.....	.....	.....	1,701
Total Eastern	1,701	.....	.....	.....	1,701
WESTERN					
Ill.	30,370	.....	.....	14	30,356
Ind.	19,874	.....	.....	4	19,870
Iowa	1,266	.....	.....	.....	1,266
Kan.	226	.....	.....	.....	226
Mich.	3,690	.....	.....	.....	3,690
Minn.	22,993	919	63	24	21,987
Mo.	2,510	607	.....	.....	1,903
Mont.	177	.....	.....	.....	177
Neb.	216	.....	.....	.....	216
N. D.	520	.....	.....	.....	520
S. D.	193	.....	.....	.....	193
Wis.	12,465	.....	.....	88	12,377
Wyo.	70	.....	.....	.....	70
Total Western	94,570	1,526	63	130	92,851
SOUTHERN					
Ark.	45	.....	.....	.....	45
Ky.	212	.....	.....	.....	212
Tex.	236	.....	.....	.....	236
Total Southern	493	.....	.....	.....	493
Total within United States	96,764	1,526	63	130	95,045
To foreign countries	11,318	.....	.....	.....	11,318
Grand total	108,082	1,526	63	130	106,363

American Sheet & Tin Plate Co.: Tonnage of Rolled and Finished Steel Products Shipped to Customers in 1919

EASTERN	Total G. T.	Sheets G. T.	Tin Plate G. T.
Conn.	5,028	4,482	546
Del.	157	153	4
D. C.	1,081	680	401
Me.	8,884	674	8,210
Md.	39,577	4,695	34,882
Mass.	38,600	29,619	8,981
N. H.	814	784	30
N. J.	34,697	15,256	19,441
N. Y.	111,858	43,945	67,913
Ohio	142,598	123,667	18,931
Pa.	87,745	66,601	21,144
R. I.	1,306	1,065	241
Vt.	224	162	62
W. Va.	13,252	12,709	543
Total Eastern	485,821	304,492	181,329
WESTERN			
Colo.	2,931	2,291	640
Idaho	194	194	.....
Ill.	138,636	50,888	87,748
Ind.	35,952	17,621	18,331
Iowa	12,706	12,171	535
Kan.	4,722	4,527	195
Mich.	193,550	190,040	3,510
Minn.	10,833	6,693	4,140
Mo.	42,133	35,946	6,187
Mont.	568	541	27
Neb.	3,657	3,177	480
Nev.	44	44	.....
N. D.	847	845	2
S. D.	98	98	.....
Utah	7,108	891	6,217
Wis.	29,717	26,903	2,814
Wyo.	101	101	.....
Total Western	483,797	352,971	130,826
SOUTHERN			
Ala.	1,912	1,891	21
Ariz.	329	329	.....
Ark.	414	378	36
Fla.	194	194	.....
Ga.	10,158	5,654	4,504
Ky.	3,409	2,572	837
La.	14,347	4,018	10,329
Miss.	101	93	8
N. M.	107	107	.....
N. C.	995	595	400
Okla.	4,301	4,272	29
S. C.	624	425	199
Tenn.	2,693	1,935	758
Tex.	12,511	9,741	2,770
Va.	5,558	2,236	3,322
Total Southern	57,653	34,440	23,213
PACIFIC COAST			
Alaska	301	34	267
Cal.	101,392	11,416	89,976
Ore.	13,714	1,798	11,916
Wash.	20,072	1,838	18,234
Total Pacific Coast	135,479	15,086	120,393
Total within U. S.	1,162,750	706,989	455,761
To foreign countries	221,224	124,257	96,967
Grand total	1,383,974	831,246	552,728

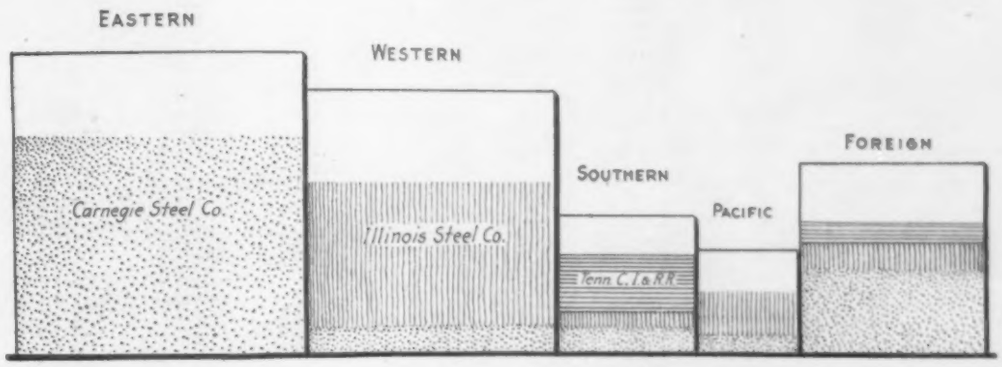
American Sheet & Tin Plate Co.: Tonnage of Rolled and Finished Steel Products Shipped to Customers in 1920

EASTERN	Total G. T.	Sheets G. T.	Tin Plate G. T.
Conn.	5,534	4,800	734
Del.	313	313	.....
D. C.	971	759	212
Me.	16,770	275	16,495
Md.	50,735	7,556	43,179
Mass.	46,819	40,535	6,284
N. H.	515	313	202
N. J.	51,151	21,400	29,751
N. Y.	138,876	60,446	78,430
Ohio	145,384	127,490	17,894
Pa.	140,173	117,643	22,530
R. I.	1,568	799	769
Vt.	403	259	144
W. Va.	16,240	14,899	1,341
Total Eastern	615,452	397,487	217,965
WESTERN			
Colo.	3,339	2,813	526
Idaho	310	292	18
Ill.	188,461	73,236	115,225
Ind.	46,218	25,890	20,328
Iowa	15,594	15,028	566
Kan.	4,633	4,543	90
Mich.	176,843	171,665	5,178
Minn.	13,742	9,281	4,461
Mo.	45,462	38,277	7,185
Mont.	628	628	.....
Neb.	4,272	4,111	161
Nev.	110	110	.....
N. D.	707	707	.....
S. D.	.....	.....	.....
Utah	6,362	1,341	5,021
Wis.	50,251	41,995	8,256
Wyo.	246	245	1
Total Western	557,178	390,162	167,016
SOUTHERN			
Ala.	2,545	2,543	2
Ariz.	878	878	.....
Ark.	247	247	.....
Fla.	392	374	18
Ga.	9,784	5,727	4,057
Ky.	3,722	2,670	1,052
La.	20,108	7,163	12,945
Miss.	80	75	5
N. M.	189	189	.....
N. C.	700	396	304
Okla.	4,305	4,305	.....
S. C.	535	287	248
Tenn.	5,150	3,593	1,557
Tex.	20,392	14,960	5,432
Va.	6,511	2,225	4,286
Total Southern	75,538	45,632	29,906
PACIFIC COAST			
Alaska	690	.....	690
Cal.	103,073	15,105	87,968
Ore.	14,711	1,641	13,070
Wash.	21,667	1,906	19,761
Total Pacific Coast	140,141	18,652	121,489
Total within U. S.	1,388,309	851,933	536,376
To foreign countries	199,054	116,745	82,309
Grand total	1,587,363	968,678	618,685

American Sheet & Tin Plate Co.: Tonnage of Rolled and Finished Steel Products Shipped to Customers in 1921

EASTERN	Total G. T.	Sheets G. T.	Tin Plate G. T.
Conn.	4,137	3,633	504
Del.	156	155	1
D. C.	1,366	841	525
Me.	11,096	604	10,492
Md.	19,586	4,672	14,914
Mass.	26,066	21,327	4,739
N. H.	668	499	169
N. J.	39,710	12,248	27,462
N. Y.	84,716	41,178	43,538
Ohio	75,321	60,418	14,903
Pa.	96,837	73,962	22,875
R. I.	1,383	1,015	368
Vt.	162	152	10
W. Va.	10,653	10,178	475
Total Eastern	371,857	230,882	140,975
WESTERN			
Colo.	3,848	3,161	687
Idaho	272	270	2
Ill.	87,785	30,845	56,940
Ind.	26,214	12,387	13,827
Iowa	13,977	13,470	480
Kan.	3,183	2,991	192
Mich.	62,968	60,576	2,392
Minn.	8,032	5,200	2,832
Mo.	30,639	23,934	6,705
Mont.	291	290	1
Neb.	1,890	1,816	74
Nev.	10	10	.....
N. D.	624	624	.....
S. D.	.....	.....	.....
Utah	1,399	1,269	130
Wis.	15,733	13,362	2,371
Wyo.	373	373	.....
Total Western	257,238	170,578	86,633
SOUTHERN			
Ala.	2,200	2,155	45
Ariz.	422	422	.....
Ark.	1,079	1,078	1
Fla.	570	541	29
Ga.	8,627	4,518	4,109
Ky.	3,538	2,932	606
La.	13,680	4,327	9,353
Miss.	214	213	1
N. M.	321	321	.....
N. C.	1,291	1,065	226
Okla.	3,002	3,001	1
S. C.	974	586	388
Tenn.	3,505	2,500	1,005
Tex.	13,673	9,563	4,110
Va.	6,466	2,461	4,005
Total Southern	59,562	35,683	23,879
PACIFIC COAST			
Alaska	.....	.....	.....
Cal.	73,270	14,443	58,827
Ore.	12,178	2,155	10,023
Wash.	16,687	2,609	14,078
Total Pacific Coast	102,135	19,207	82,928
Total within U. S.	790,792	456,350	334,415
To foreign countries	236,181	175,509	60,672
Grand total	1,026,973	631,859	395,087

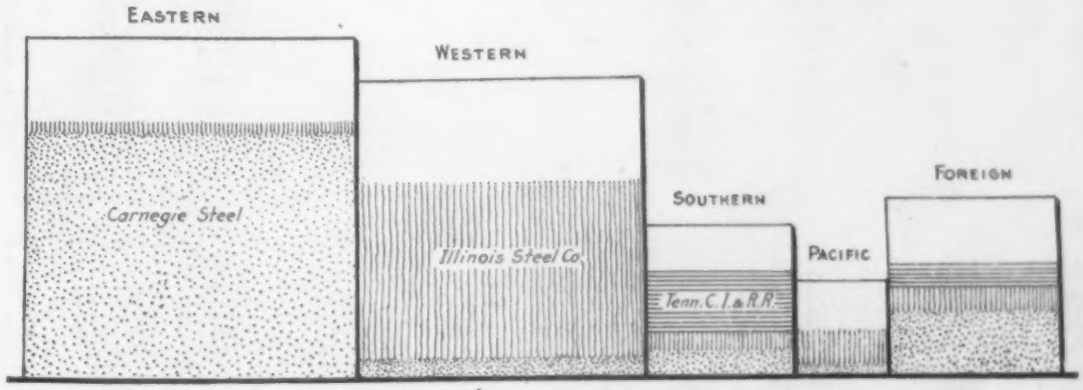
SHIPMENTS of Rolled Steel, Not Including Pipe, by Six Subsidiaries of the United States Steel Corporation into the Four Sections of the United States and into Foreign Countries. An area of 1 sq. in. of each diagram represents about 1,500,000 tons. Most of the white space in each square represents wire and wire products, sheets and tin plate



SHIPMENTS IN 1919 IN THOUSANDS OF TONS*

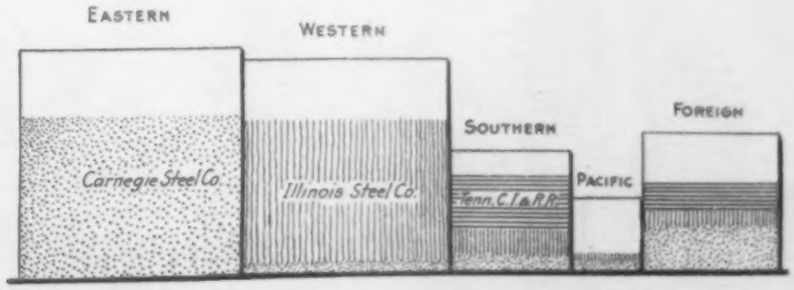
	Eastern	Western	Southern	Pacific	Export	Total
Carnegie Steel Co.	2,939	335	148	83	729	4,233
Illinois Steel Co.	55	1,660	75	207	224	2,221
Tennessee Coal, Iron & Railroad Co.	2	9	357	...	148	516
Minnesota Steel Co.	1	53	...	...	34	89
American Steel & Wire Co.	493	547	229	77	300	1,655
American Sheet & Tin Plate Co.	485	484	58	135	221	1,384
	3,976	3,088	877	502	1,656	10,098

*Mostly gross tons, though totals of main tables show net and gross tons added together.



SHIPMENTS IN 1920 IN THOUSANDS OF TONS

	Eastern	Western	Southern	Pacific	Export	Total
Carnegie Steel Co.	3,709	263	154	42	490	4,660
Illinois Steel Co.	126	2,256	120	143	206	2,963
Tennessee Coal, Iron & Railroad Co.	8	23	414	3	197	646
Minnesota Steel Co.	2	94	...	...	11	108
American Steel & Wire Co.	687	677	242	87	278	1,972
American Sheet & Tin Plate Co.	615	557	75	140	199	1,587
	5,147	3,970	1,015	415	1,381	11,936



SHIPMENTS IN 1921 IN THOUSANDS OF TONS

	Eastern	Western	Southern	Pacific	Export	Total
Carnegie Steel Co.	1,697	117	89	35	295	2,234
Illinois Steel Co.	73	1,405	102	28	94	1,702
Tennessee Coal, Iron & Railroad Co.	1	12	302	9	143	466
Minnesota Steel Co.	2	3	...	...	2	6
American Steel & Wire Co.	332	349	143	63	86	972
American Sheet & Tin Plate Co.	372	257	60	102	236	1,027
	2,477	2,143	696	237	856	6,407

American Steel & Wire Co.: Tonnage of Rolled and Finished Steel Products Shipped to Customers in 1919

States	Total Tons	Blooms, Slabs and Billets G.T.	Plates G.T.	Wire Rods G.T.	Drawn Wire N.T.	Wire Nails N.T.	Other Mill Products Tons
EASTERN							
Conn.	55,365.9	.....	.....	10,743.3	36,613.3	3,277.9	4,731.4
Del.	1,172.1	.....	.....	.....	351.3	517.4	303.4
D. C.	1,580.5	.....	.....	.....	297.1	888.2	395.2
Me.	4,046.9	.....	.....	.....	610.7	2,329.2	1,107.0
Md.	9,881.0	.....	27.4	.....	2,515.2	4,076.1	3,262.3
Mass.	45,185.0	63.3	22.0	6,316.0	24,250.9	8,891.5	5,641.3
N. H.	1,949.7	.....	.....	.....	424.8	1,025.8	499.1
N. J.	27,491.4	.....	8,461.8	2,875.8	6,660.5	4,478.7	5,014.6
N. Y.	77,889.8	.....	.....	3,105.7	26,774.8	22,996.9	25,012.4
Ohio	137,578.7	446.7	557.2	32,517.3	56,345.9	23,314.6	24,397.0
Pa.	109,912.2	2,450.1	1,432.9	27,419.8	43,743.4	19,632.6	15,229.4
R. I.	6,278.2	.....	.....	2,460.4	2,253.1	827.0	737.7
Vt.	1,759.9	.....	.....	.....	496.0	798.2	465.7
W. Va.	12,629.5	.....	190.6	733.4	2,626.9	4,679.3	4,399.3
Total Eastern	492,720.8	2,960.1	10,691.9	86,171.7	203,963.9	97,733.4	91,195.8
WESTERN							
Colo.	7,440.0	.....	.....	.....	2,950.8	1,968.6	2,520.6
Idaho	4,013.4	.....	.....	.....	1,333.3	823.3	1,856.8
Ill.	122,486.1	13.0	.....	26,684.7	49,559.2	15,426.1	30,803.1
Ind.	49,330.3	2.7	.....	12,489.1	12,552.4	5,356.0	18,930.1
Iowa	41,303.4	.....	.....	191.2	9,011.5	8,631.7	23,469.0
Kan.	11,419.2	.....	.....	.....	2,909.7	2,948.8	5,560.7
Mich.	120,007.0	.....	.....	.....	89,952.8	10,271.8	19,782.4
Minn.	31,853.8	.....	.....	290.6	10,490.5	11,714.7	9,358.0
Mo.	54,307.3	.....	.....	739.2	20,400.0	13,348.9	19,819.2
Mont.	6,843.4	.....	.....	.....	4,172.8	1,201.4	1,469.2
Neb.	11,979.4	.....	.....	.....	3,677.8	3,427.6	4,874.0
Nev.	437.2	.....	.....	.....	109.0	216.3	111.9
N. D.	2,818.7	.....	.....	.....	1,486.6	275.5	1,056.6
S. D.	10,071.3	.....	.....	26.1	3,202.7	1,082.9	5,759.6
Utah	3,210.2	.....	.....	.....	865.8	629.6	1,714.8
Wis.	66,693.6	.....	3,445.8	2,946.1	28,326.7	8,944.4	23,030.6
Wyo.	3,211.4	.....	.....	.....	1,748.6	557.2	905.6
Total Western	547,425.7	15.7	3,445.8	43,367.0	242,750.2	86,824.8	171,022.2
SOUTHERN							
Ala.	15,076.0	.....	9.0	.8	2,602.4	4,587.9	7,875.3
Ariz.	1,074.0	.....	.....	.....	300.1	167.2	606.7
Ark.	12,512.3	.....	.....	.....	3,127.4	2,743.2	6,641.7
Fla.	6,885.8	.....	.....	.....	765.0	3,146.7	2,974.1
Ga.	18,356.1	.....	.....	.....	2,870.4	5,531.9	9,953.8
Ky.	29,283.5	.....	.....	.....	4,453.2	7,254.7	17,575.6
La.	18,673.7	.....	.....	51.5	5,044.5	7,293.4	6,284.3
Miss.	8,168.1	.....	.....	.....	1,763.4	2,379.2	4,025.5
N. M.	1,615.2	.....	.....	.....	951.0	245.7	418.5
N. C.	13,416.3	.....	.....	.....	2,422.3	4,260.1	6,733.9
Okla.	9,503.9	.....	.....	.....	2,301.0	2,236.9	4,966.0
S. C.	6,775.7	.....	.....	.....	833.4	2,395.0	3,547.3
Tenn.	25,480.9	.....	.....	.....	5,662.9	6,860.9	12,957.1
Tex.	52,545.4	.....	.....	26.3	13,891.7	14,868.5	23,758.9
Va.	19,230.8	.....	1,342.3	.....	3,727.1	5,236.0	8,925.4
Total Southern	238,597.7	.....	1,351.3	78.6	50,715.8	69,207.3	117,244.1
PACIFIC COAST							
Alaska	257.1	.....	.....	.....	.7	108.0	148.4
Cal.	46,240.4	.....	7,411.2	225.3	9,310.1	14,623.3	14,670.5
Ore.	11,167.8	.....	1,322.2	.....	2,076.7	3,307.0	4,461.9
Wash.	19,034.4	.....	3,239.6	.....	3,606.7	5,104.4	7,083.7
Total Pacific Coast	76,699.7	.....	11,973.0	225.3	14,994.2	23,142.7	26,364.5
Total Within United States	1,355,443.9	2,975.8	27,462.0	129,842.6	512,424.1	276,908.2	405,826.6
To Foreign Countries	299,747.0	11,299.0	.....	31,452.0	172,240.0	63,987.0	20,769.0
Grand Total	1,655,190.9	14,274.8	27,462.0	161,294.6	684,664.1	340,895.2	426,595.6

American Steel & Wire Co.: Tonnage of Rolled and Finished Steel Products Shipped to Customers in 1920

States	Total Tons	Blooms, Slabs and Billets G. T.	Wire Rods G. T.	Drawn Wire N. T.	Wire Nails N. T.	Other Mill Products Tons
EASTERN						
Conn.	65,377.5	.....	14,353.2	40,627.8	4,458.4	5,938.1
Del.	1,775.4	.....	39.5	316.8	1,125.9	293.2
D. C.	1,889.1	.....	.....	241.6	1,247.5	400.0
Me.	6,351.0	.....	5.0	748.2	3,928.0	1,669.8
Md.	13,479.6	.....	25.0	2,897.5	6,398.6	4,158.5
Mass.	55,007.1	61.0	9,953.8	25,546.1	11,439.2	8,007.0
N. H.	2,937.9	.....	.....	724.9	1,226.0	987.0
N. J.	30,897.7	.....	7,074.6	10,166.9	6,265.6	7,390.6
N. Y.	115,604.2	.....	9,211.4	37,143.6	28,453.6	40,795.6
Ohio	185,091.5	740.5	44,892.7	81,907.2	29,256.5	28,286.6
Pa.	181,851.0	2,799.4	58,260.4	67,129.5	29,168.5	24,487.2
R. I.	7,968.0	.....	3,266.9	2,732.8	874.5	1,093.8
Vt.	1,758.2	.....	.....	519.3	681.5	557.4
W. Va.	17,128.6	.....	800.5	2,872.5	7,526.1	5,929.5
Total Eastern	687,116.8	3,600.9	147,883.0	273,574.7	132,049.9	129,994.3
WESTERN						
Colo.	8,179.5	.....	.....	2,900.0	2,556.8	2,722.7
Idaho	3,942.5	.....	.....	1,036.8	1,298.1	1,607.6
Ill.	181,167.5	22.0	45,196.9	74,781.8	24,351.9	36,814.9
Ind.	67,447.2	9.4	15,961.1	21,590.4	7,903.5	21,982.8
Iowa	41,853.4	.....	.....	10,112.7	11,494.1	20,246.6
Kan.	12,140.9	.....	.....	2,640.6	3,442.8	6,057.5
Mich.	155,378.7	.....	.....	110,220.1	12,958.0	32,200.6
Minn.	39,681.2	.....	242.5	11,319.5	17,192.0	10,927.2
Mo.	56,269.2	.....	1,048.5	16,696.1	17,606.7	20,917.9
Mont.	5,189.9	.....	.....	2,225.4	1,780.3	1,184.2
Neb.	10,895.7	.....	.....	2,860.8	3,802.9	4,232.0
Nev.	627.7	.....	.....	131.4	194.3	302.0
N. D.	1,667.7	.....	.....	834.9	107.8	725.0
S. D.	6,394.3	.....	.....	1,689.9	835.6	3,868.8
Utah	3,846.4	.....	.....	953.7	1,353.0	1,539.7
Wis.	79,833.3	.....	2,604.6	31,327.9	9,776.5	36,124.3
Wyo.	2,986.0	.....	.....	1,351.8	805.2	829.0
Total Western	677,501.1	31.4	65,053.6	292,673.8	117,459.5	202,282.8

States	Total Tons	Blooms, Slabs and Billets G. T.	Wire Rods G. T.	Drawn Wire N. T.	Wire Nails N. T.	Other Mill Products Tons
SOUTHERN						
Ala.	14,096.0	.....	5.7	2,177.1	5,250.8	6,662.4
Ariz.	1,820.8	.....	.....	380.2	491.1	949.5
Ark.	13,354.7	.....	.....	2,687.6	3,918.2	6,748.9
Fla.	9,138.4	.....	52.9	1,228.9	4,889.7	2,966.9
Ga.	19,915.5	.....	25.1	2,994.4	6,245.9	10,650.1
Ky.	28,094.8	.....	.....	4,835.8	8,938.2	14,320.8
La.	19,407.8	.....	386.2	4,603.3	8,173.1	6,245.2
Miss.	5,244.5	.....	.....	1,015.1	1,821.6	2,407.8
N. M.	2,081.1	.....	.....	902.6	517.4	661.1
N. C.	16,277.9	.....	.....	2,231.8	6,477.8	7,568.3
Okla.	10,823.8	.....	.....	2,148.8	2,984.2	5,690.8
S. C.	8,470.5	.....	1.8	828.1	2,539.2	5,103.2
Tenn.	23,988.9	.....	188.8	5,129.3	8,210.3	10,647.5
Tex.	43,501.1	.....	50.2	10,339.2	17,776.4	15,196.7
Va.	26,224.9	.....	.....	4,425.8	9,590.3	12,158.6
Total Southern	242,440.7	.....	710.7	45,928.0	87,824.2	107,977.8
PACIFIC COAST						
Alaska	379.8	.....	.....	15.9	130.1	233.8
Cal.	55,647.2	.....	1,651.0	14,562.6	23,457.1	16,976.5
Ore.	12,592.3	.....	.....	2,689.6	4,684.2	5,218.5
Wash.	18,759.6	.....	191.5	3,786.6	7,170.5	7,611.0
Total Pacific Coast	87,378.9	.....	1,842.5	21,054.7	35,441.9	29,039.8
Total Within United States	1,694,437.5	3,632.3	215,489.8	633,231.2	372,775.5	469,294.7
To Foreign Countries	278,420.0	.....	40,741.0	143,512.0	58,884.0	35,283.0
Grand Total	1,972,857.5	3,632.3	256,230.8	776,743.2	431,659.5	504,577.7

American Steel & Wire Co.: Tonnage of Rolled and Finished Steel Products Shipped to Customers in 1921

States	Total Tons	Blooms, Slabs and Billets G. T.	Wire Rods G. T.	Drawn Wire N. T.	Wire Nails N. T.	Other Mill Products Tons
EASTERN						
Conn.	29,705.8	.....	6,664.9	16,441.6	3,614.8	2,984.5
Del.	1,055.1	.....	.....	343.6	509.7	201.8
D. C.	1,591.5	.....	54.1	241.0	1,005.5	290.9
Me.	4,745.6	.....	.....	455.8	3,282.8	1,007.0
Md.	9,638.3	34.1	3,298.1	2,491.6	3,630.4	3,516.3
Mass.	25,294.3	.....	.....	9,578.7	7,673.6	4,709.8
N. H.	2,423.0	.....	1,223.3	477.9	1,578.3	366.8
N. J.	17,330.5	.....	3,146.6	4,693.3	5,542.6	5,871.3
N. Y.	68,719.8	.....	9,248.3	17,181.4	21,151.4	27,240.4
Ohio	72,901.2	255.5	17,659.7	30,947.2	12,976.0	19,474.2
Penn.	79,603.9	320.0	2,030.8	25,906.2	18,847.8	16,870.2
R. I.	5,296.3	.....	.....	1,283.6	1,117.7	864.2
Vt.	1,748.6	.....	193.4	411.7	910.1	426.8
W. Va.	11,463.7	.....	.....	2,078.5	4,153.6	5,038.2
Total Eastern	331,517.6	609.6	43,519.2	112,532.1	85,994.3	88,862.4
WESTERN						
Colo.	5,531.1	.....	.....	1,622.5	2,021.6	1,887.0
Idaho	1,249.6	14.2	17,440.0	309.7	539.2	400.7
Ill.	92,705.1	2.6	9,656.6	33,942.3	12,906.8	28,401.8
Ind.	34,602.1	.....	.....	7,071.0	4,227.8	13,644.1
Iowa	26,000.3	.....	275.7	5,283.6	6,826.9	13,889.8
Kan.	7,985.4	.....	24.0	1,776.9	2,779.0	3,429.5
Mich.	74,168.7	.....	240.1	50,342.1	7,786.9	15,764.0
Minn.	22,128.0	.....	.....	5,228.9	10,960.5	5,914.6
Mo.	35,514.6	.....	.....	9,762.8	12,052.8	18,458.9
Mont.	2,061.1	.....	.....	725.0	781.7	554.4
Neb.	7,170.2	.....	.....	1,495.6	3,040.1	2,634.5
Nev.	569.4	.....	.....	122.6	304.8	142.0
N. D.	592.4	.....	.....	178.6	34.1	379.7
S. D.	2,376.4	.....	.....	541.6	548.0	1,286.8
Utah	1,030.1	.....	.....	181.8	502.8	345.5
Wis.	32,662.7	.....	495.3	12,769.4	7,618.0	11,780.0
Wyo.	2,281.9	16.8	399.7	873.6	452.3	556.3
Total Western	348,629.1	.....	28,531.4	132,228.0	73,383.3	114,469.6
SOUTHERN						
Ala.	8,959.1	.....	.....	1,000.4	3,055.0	4,903.7
Ariz.	323.0	.....	.....	53.4	43.5	226.1
Ark.	8,596.3	.....	.....	1,581.5	2,783.1	4,231.7
Fla.	7,189.0	.....	.....	1,052.5	3,308.8	2,827.7
Ga.	7,823.4	.....	.....	850.8	2,870.5	4,102.1
Ky.	17,380.6	.....	.....	2,369.3	3,381.2	11,630.1
La.	9,804.0	.....	25.8	1,795.9	4,834.8	3,147.5
Miss.	4,418.5	.....	.....	585.6	1,813.0	2,019.9
N. M.	828.9	.....	3.6	300.4	201.8	323.1
N. C.	8,835.1	.....	.....	1,091.0	4,094.0	3,650.1
Okla.	6,279.4	.....	.....	1,052.5	1,957.8	3,269.1
S. C.	3,920.8	.....	.....	452.3	1,368.6	2,099.9
Tenn.	13,238.2	.....	51.4	4,121.4	4,121.4	6,684.3
Tex.	29,596.8	.....	30.0	2,432.5	11,875.6	10,626.0
Va.	16,436.3	.....	.....	7,043.8	6,019.4	7,721.9
Total Southern	143,629.4	.....	110.8	24,326.9	51,728.5	67,468.2
PACIFIC COAST						
Alaska	163.6	.....	.....	94.8	4.0	41.2
Cal.	40,297.8	.....	.....	.....	8,712.6	13,622.4
Ore.	8,053.4	.....	.....	.....	1,653.5	2,895.5
Wash.	14,023.2	.....	.....	.....	2,899.1	4,606.1
Total Pacific Coast	62,538.0	.....	.....	94.8	13,269.2	21,165.2
Total Within United States	886,314.1	626.4	72,256.2	282,356.2	239,114.9	291,960.4
Total Foreign Countries	86,039.0	924.0	11,735.0	42,612.0	19,840.0	10,928.0
Grand Total	972,353.1	1,550.4	83,991.2	324,968.2	258,954.9	302,888.4

of the shipments of six subsidiaries of the United States Steel Corporation. More specific cases could be obtained by studying a given commodity in terms of the states to which the different companies sent the steel.

The tabulated figures were introduced into the Pittsburgh basing case by the United States Steel Corporation, and as they cover only the operations of the leading interest, they are not necessarily absolute in showing relations for the industry as a whole but are at least indications of the ratios of distribution. In short, they serve to locate cross movements, due in part to producing localities consuming more than they make.

Minnesota Steel Co.: Tonnage of Rolled and Finished Steel Products Shipped to Customers in 1921

WESTERN	Total G. T.	Blooms, Slabs and Billets G. T.	Sheet Bars G. T.	Bars G. T.
Ill.	1,393	...	...	1,393
Ind.	386	...	...	386
Iowa	79	...	...	79
Kan.	53	...	...	53
Mich.	9	...	...	9
Minn.	1,025	119	31	875
Mont.	58	...	...	58
Wis.	406	...	...	406
Total Western	3,391	119	31	3,241
SOUTHERN				
Kentucky	34	...	...	34
Total Southern	34	...	...	34
Total within United States	3,425	119	31	3,275
To Foreign Countries	2,278	...	...	2,278
Grand Total	5,703	119	31	5,553

As an answer to questions regarding the flow of steel from maker to user, the tables will supply authentic information not heretofore available and they afford interesting observations respecting the influence of the volume of demand on sales from plants distant from points of use.

Data on shipments of tubular goods are missing, as the National Tube Co. was not required to answer the Federal Trade Commission order to cease using the Pittsburgh base in naming prices—though it agreed jointly with the other Steel Corporation subsidiaries to abide by the commission's order—and similarly the records of the shipments of the American Bridge Co., subsidiary of the Steel Corporation, were not presented to the commission. A good reason exists for the commission's attitude toward the National Tube Co., seeing that what is classed as the Eastern section of the country has 93½ per cent of the pipe-making capacity and the Western district has the remaining 6½ per cent, centered chiefly in Chicago. These facts are obtainable in the Annual Review Number of THE IRON AGE in the tables of capacities of the country's steel plants (p. 9 and following, Jan. 1; incidentally it was there shown that the Pittstburgh, Valley and Cleveland districts have over two-thirds of all the pipe making mills).

The distribution of steel bars, supplied by four of the six subsidiaries, gives some illustrations of the cross currents in shipments as between the sectional divisions and as influenced by the state of demand. The situation is more pronounced in the case of certain States, but this analysis is concerned only with the general divisions.

The records of the three years, as was to be expected, show that practically no steel bars came into the Eastern section from other sections. The Carnegie Steel Co. supplied 99.5 per cent of the business of the four companies in 1921, the notably lean year of the three, and 98 and 98.5 per cent in the other years.

When it comes to the Western section, the lean year naturally showed relatively small participation by outside districts. Then the Illinois Steel Co. supplied 78.5 per cent of the steel bars, the Minnesota Steel Co. was active only a part of the year, and the Carnegie Steel Co. supplied 20.5 per cent. In the other years, with demand larger, the Carnegie Steel Co. was called on for a larger percentage and the Minnesota Steel Co. also contributed to the supply.

The same story may be told of the Southern section. In 1921, the lean year, the Tennessee company supplied 60 per cent of the bars against 55 and 56 in the other years, when the Illinois and Carnegie companies made up the remainder, the greater part coming from the Carnegie company.

In passing it is interesting to note that in the shipments to foreign countries in the three years, the Carnegie Steel Co. had 72 per cent of the business, the Illinois company 16 per cent and the Minnesota 10 per cent (in fact, supplying 14 per cent in 1919), the Minnesota product presumably going chiefly to Canada.

The export showing in both heavy and light rails may be referred to. For the three years the Carnegie company had 47.5 per cent of the heavy rail business, and in light rails, 29 per cent. The Illinois company had 11 per cent of the exports in heavy rails and 47 per cent in light rails. The Tennessee company had 41 per cent in heavy rails and 24 per cent in light rails.

The ratio figures on actual production of the entire country in four sections of the country, listed under the map of the United States on page 539, were taken from the records of the American Iron and Steel Institute, with allowances for probable production in arranging the regrouping of States.

Included among the tables is one showing the distribution by the United States Steel Corporation subsidiaries of wire products and sheet and tin plate.

Distribution, Per Cent of Total, of Wire, Sheets and Tin Plate, According to Shipments of 1919, 1920 and 1921

Sections	Wire	Nails	Other Wire Products	Sheets	Tin Plates
Eastern	33	30	25	38	34
Western	37	27	39	38	25
Southern	7	20	24	5	5
Pacific	3	8	6	6	21
Foreign	20	14	5	14	15

Government Seeks to Recover

At Seattle, a suit is on trial in which the Government seeks to recover the sum of $475,792.81 from the Puget Sound Machinery Depot of that city, in a controversy over the manufacture of 102 Scotch marine boilers during the war, for which the Government furnished the plates. It contends that in August, 1918, it contracted with the defendant for the boilers, but after cancellation of the contract, asked the return of certain machinery turned over to the defendant. The defendant contends that the materials in dispute were purchased by it from the Government agents, and that the materials are their property. The case has not yet been concluded.

The American Engineering Council will continue its affiliation with the National Board of Jurisdictional Awards in the Building Industry, to which it has reappointed Rudolph P. Miller, New York, as its representative. The service performed by the board in the five years of its existence is regarded as benefiting labor, contractor, building owner and the public. The work of the board is stated by the council's committee to have been of definite advantage to that large branch of the engineering profession engaged in the design and construction of building projects, and to have helped materially to stabilize building conditions.

Better Foundry Pattern Storage Advocated

Protection from Fire and from Loss Essential—Centralized Control for Keeping Continuous Record of Location of Every Pattern

INSTALLATION of a workable storage system and the protection of patterns against fire and weather conditions are demanded by both the importance of the pattern in foundry production and the financial investment involved. The present survey found pattern storage space and provision for protection against fire and weather conditions in 50 per cent of the plants visited. In some cases an isolated building of the fireproof or slow-burning mill type was set aside for the purpose. Other plants isolated a section of the plant for pattern storage by fireproofing walls and doors.

A few examples will illustrate the consideration given in the care of this key equipment: A fireproof building erected by a company which makes and owns the patterns used in its foundry has the pattern shop on the top floor. A slow-burning mill-type building is used for pattern storage by a foundry owning all patterns used for its production. This plant has been established a number of years, but apparently the management gave early attention to the care of patterns. Fire walls embodied in the construction isolate sections of the plant, thus increasing the protection already afforded by the type of construction.

Fire resulting in many thousand dollars of loss in patterns burned, and customers dissatisfied due to demonstrated lack of proper care of important patterns, brought to the attention of one management the value, in dollars and good will, of protected pattern storage. A fireproof storage building was erected after the fire, but the business lost as a result of the destroyed patterns would have contributed materially to its cost.

Storage in the Smaller Plants

Managers of adequately protected smaller plants appreciate the advantage of protection against pattern loss. The following are some observations made during the survey:

1—A company making castings for its own product had accumulated a large number of valuable patterns. To insure their protection, several small, completely isolated, buildings had been erected as storage space. These buildings were fireproof throughout, with steel storage shelves for the smaller patterns.

NO. OF PAT	NAME OF PART		CUSTOMER		
SUPERSEDES NO.	SUPERSEDED BY NO.	STORAGE LOCATION			
PATS. ON BOARD	PATS ON PLATE	PCS. TO PAT	NO. CORE BOXES	PCS TO CORE BOXES	FOLLOW BOARD
MATERIAL OF PAT	MATERIAL OF BOXES	CONDITION WHEN RECEIVED		APPROX WEIGHT	ACTUAL WEIGHT
AMOUNT PER DAY	TO	MOLDER NO	FROM	RECEIVED	SHIPPED
REMARKS					

Fig. 2—(At Left) Well-Designed Storage Record Card. The two upper corners of card take the two items of information which control the filing

RECORD OF PATTERNS

Name of Part		Pattern No.	Core Boxes
Material of Casting	Stored-Dept.	Floor	Box
Drawing Sheet	No. Pieces per Car	Used on Models	
Same as No.			
Memo:			

Fig. 3—(At Right) Pattern Storage Record Card Which Uses Valuable Space for its Own Name

2—A large number of valuable master patterns stored in a wooden building caused the management of one plant considerable anxiety. A brick office building was under construction and it was decided to allot sufficient storage space in this building for the master patterns. Fig. 1, shows a section of the steel shelving of this storage space.

3—A small jobbing plant had found it necessary to house its pattern storage within the foundry building. The storage section was made fireproof by surrounding it with fireproof walls, providing fire doors and installing steel shelves.

In contrast with the above is the practice in many plants of storing large numbers of valuable patterns in wooden buildings. A jobbing foundry producing large castings had accumulated patterns enough to fill a wooden warehouse 50 x 100 ft., two stories high. The smaller patterns were stored in wooden bins. Accumulation of receipts from customers and returns from the foundry were piled about the uprights supporting the upper floor. At the time the building was visited the pattern clerk was smoking a cigarette

THIS is the fourth of a series of studies on "Better Foundry Practice" made by the Policyholders' Service Bureau of the Metropolitan Life Insurance Co., New York. Three others have appeared in THE IRON AGE *of Nov. 20 and Dec. 11, 1924, and Jan. 15, 1925.*

among this valuable material arranged in bonfire style. A carelessly dropped cigarette stub might easily have caused the loss of thousands of dollars to the foundry's customers, delayed production, and cost the foundry valuable business accumulated during many years of effort.

Storage Systems

Provision of a system making possible the ready location of a pattern is of almost equal importance to protected storage. Storage systems have the following objects:

1—Giving ready access to patterns in storage.
2—Recording receipts from customers and deliveries to them.
3—Locating patterns in the plant.
4—Keeping down storage space requirements by facilitating the operation of a system to eliminate obsolete patterns.
5—Giving data which will thoroughly describe patterns.

Efficient operation of any system requires centralized control. Responsibility under good practice

Fig. 1—Storage Stacks Made of Steel, for Small Patterns. This equipment is in a brick building

should be centered in one man, who alone has control of the storage system. Some plants had complete control of patterns; in others, the existing system failed to give such control.

How One Plant Did It

A system illustrative of those found operating successfully in several jobbing foundries is, briefly, as follows:

Recording Mechanism.—A card index system was used for recording and filing pattern information. Fig. 2 shows the storage record card used. Cards were grouped by customers and filed within a group by pattern number. The important corner positions on the card are given to the two items controlling filing. Two files of cards were kept; one file contained record cards of patterns in the possession of the foundry; the other was a file of record cards of patterns which had been returned to the customer.

Numbering Patterns.—The basis of this system was the numbering of patterns. Customers usually numbered patterns by applying the number appearing on the blue-print of the part. Metal tags, or numbers painted or burned on patterns, were means of identification.

Recording Patterns.—The information available concerning the pattern is entered on a card as outlined in Fig. 2. As complete a description as possible is made. The record is supplemented by an outline sketch of the pattern on the reverse of the card. When the pattern is in a storage bin containing a number of small units, this facilitated finding.

Storage Room.—In the plant represented in Fig. 1 each stack was given a number, each shelf a letter, and each division of a shelf or bin in the stack, a number. The remaining floor space was divided into sections, designated by letters and used for large patterns.

Locating the Pattern in Storage.—The location of the pattern in storage was entered on line 2 in the space marked "Storage Location"—for example: *Aisle* 20, *Shelf D, Section* 5. Patterns and core boxes were stored together.

Locating the Pattern in the Plant.—On withdrawal from storage, patterns are checked for condition and number of parts. Each pattern placed in production is charged to the man doing the job. As patterns are returned from the plant, inspection is made to determine their condition and to check parts. Men are made responsible for patterns issued to them. Record of deliveries to and receipts from the plant are made in the space provided in the central section of the record card.

Thus, an entry showing a pattern sent into the plant with no corresponding entry showing return to storage indicates to the pattern clerk that it is still in the plant and gives him the name of the molder to whom the pattern is charged.

Receipts from Customers.—Space is provided in the lower right corner for entries of date of receipt of the pattern from customers and return to them.

Elimination of Obsolete Patterns.—When demands are received from pattern clerks for increased storage space, an inventory of stored patterns often reveals large numbers of obsolete patterns. Some system of automatic elimination of unnecessary equipment overcomes crowded conditions, in most instances. Practice in the elimination of obsolete patterns depends upon the product of the plant.

Twice a year the plant using the card shown in Fig. 2, inspected the cards showing patterns still retained by the foundry. When the record showed the pattern had not been used in the past year, notification was sent the customer owning the pattern, with a request for permission to return it.

Descriptive Data on Pattern.—Referring again to Fig. 2, lines 3, 4 and 5 of the record card give the following data:

1—General appearance and the number of parts comprising the pattern.
2—Material of the pattern.
3—Condition when received.
4—Weight of the casting, *a*—as approximated on receipt of pattern; *b*—actual weight of casting.
5—Average daily production, *a*—expected; *b*—actual.

This information enables the pattern clerk to inspect patterns before putting them in production and insures issue of complete pattern equipment. It also shows production data valuable in estimating time and material needed for the patterns recorded.

Central Control.—The pattern clerk supervises all movements of pattern equipment. Patterns to be put in production are taken from storage and placed on the floor outside the pattern office as requisitions are received from the production department. Foremen distribute patterns from this point.

Operating Mechanisms Found

The mechanisms for operating the storage system in plants studied were as follows:

System	Number of Plants
Card index	21
Ledger	4
Sections of storage floor allotted to individual customers (no recording system)	1
No system	8
Plants using patterns continuously	5
Plants depending on memory of pattern clerk	15

Ledger systems usually were classified by name of customer. In many cases this system had become cumbersome, due to the many exchanges of patterns. It is not so flexible as the card index system.

Other Practices in Storing Patterns

One plant operating the foundry for the needs of its machine shops embodied pattern data in a complete historical record of the pattern through all stages from storage to finished, machined casting. This his-

tory of the pattern enabled the foundry to benefit by past experience and to work toward complete elimination of defective work. One card gave complete data, as follow:

1—Description of patterns and core boxes (patterns and core boxes were stored together).
2—Sketch of pattern.
3—Number and location of flask to be used in molding.
4—Production data.
5—Cost data.
6—Experience in castings made previously:
a—The location and kind of defect occurring in the casting were recorded on the sketch.
b—Sand used and method of molding.
c—Analysis of metal entering casting.

Fig. 3 is the storage record card of another plant connected with a machine shop. Some alteration in the arrangement of entries on this card would improve it. The model and pattern number would be better placed in the top space on the card and, if entry of the card's name were made at all, it might occupy a less important location, for instance at the bottom. The back of this card is laid out to record shipments of patterns to other foundries. It shows shipping date and receiving date and is used also for recording in and out data on patterns used in the plant.

Upkeep of System

A system may provide for every factor necessary to the care of patterns, but be practically valueless unless kept up in every detail. The following instance encountered during the survey will illustrate this:

The question whether a storage system was used brought forth the statement that a card index system was maintained showing the location of every pattern. A customer a short time later claimed a shortage in returned patterns. The foundry superintendent called in the pattern storage clerk, a man about 80 years old, who said he knew where every pattern was located. At mention of the pattern, the clerk recalled having given it to the superintendent. Neither the superintendent nor his assistant remembered the pattern. Just at this time the customer uncovered it in looking through a pile of patterns in a corner of the superintendent's office.

A card index system was kept at this plant, but not kept up to date and the pattern clerk did not exercise complete control. As entry to the storage space was granted to molders and others, no absolute control was possible. This instance, however, is in advance of the plant having no storage system nor any semblance of arrangement for the storage of patterns.

Patterns piled on the sidewalk outside the plant, patterns strewn about the room used for storage, and patterns scattered about the plant, sum up the findings at one plant. Here again the management was experiencing a customer's complaint which showed up the need for systematic pattern storage. Castings had been made and shipped, lacking a boss, which had become separated from the pattern in storage.

TOTE BOX CONTENTS VISIBLE

Stacking Does Not Interfere with View as to What and How Much Is in Boxes

In the detail and detail assembly section of one of the departments in Schenectady works of the General Electric Co., tiering tote boxes are employed of a kind that at all times makes it possible to see whether boxes are empty or, if loaded, just what is in them. With the tote boxes ordinarily in use, stacking of them completely covers the contents of all but the top box.

The general construction of these boxes may be noted from the accompanying illustration. They are made of sheet steel of 0.060 in. thickness. The ends of the boxes are flanged on four sides to provide stiffness. Three of the flanges are used for attaching bottom and side panels. The top flange is used as a hand hold serviceable in lifting the box. On the top flange at each end of the box diagonally placed are guide pins which fit into holes in the bottom of the tray placed on top of it. These pins assure stacking which is flush on all sides, permit higher stacking than might otherwise be safe and prevent upsetting or shifting when a number of the boxes are mounted on a truck for transfer.

Those boxes used in greatest quantities have ends about 6 in. high by 15 in. wide. The side panels are 3 in. high and about 30 in. long. Other sizes of boxes are in use, varying as to height of side panels, though the bottom area is the same, making it possible to stack them with the boxes in more common use. The idea lends itself to an infinite variety of sizes, depending upon the particular requirements of the shop. In this way, several standards may be set as to height with one standard for bottom area. Boxes may be riveted or welded.

While boxes may be stacked on the floor before being transferred to another department, as their idea is to simplify handling, it is better to load them direct on four wheel "dollies" or on skids for use with elevating trucks, thereby avoiding unnecessary rehandling. This, of course, is just as true of this type of box as of older types of tote boxes.

Tiering of the Tote Boxes Does Not Cover the Contents

CENSUS OF MANUFACTURES

Total Output 2½ Per Cent Below 1919, but 39 Per Cent Above 1921

Summarizing the returns from nearly 200,000 establishments engaged in manufacturing, the Census Bureau reports for 1923 a total of 10,176,750 persons engaged in the industry, of whom 8,763,233 were wage earners. The total value of products is given as $60,481,135,000, compared with $43,653,283,000 in 1921, $62,041,795,000 in 1919 and $23,987,860,000 in 1914. Comparison of dollar values with 1914 has relatively little meaning, because of the greatly increased unit prices. It is estimated, however, that the fall in prices since 1919 has much more than neutralized the small drop in reported value of products. In fact, the 1923 output of manufacturing industries, measured in quantities instead of values, shows an increase estimated at 19 per cent in 1923 over the corresponding quantities of 1919.

In considering any statistics such as those given by the Census Bureau, it must be remembered that the finished products of one plant in thousands of cases become the raw materials of another plant. As the figures given in the tables represent the summation of reports from all these plants, it follows that there is inevitably a large amount of duplication which cannot be located and eliminated.

In the table will be found the outstanding features of the report.

	1923	1921	1919	1914
Establishments	195,714	196,267	214,383	177,110
Persons engaged*	10,177	8,266	10,689	8,118
Wage earners*	8,763	6,947	9,000	6,896
Horsepower*	33,749	.....	29,505	22,437
Coal used, net tons*	241,169	.....	219,518	182,315
Wages paid†	$10,986	$8,200	$10,462	$4,068
Cost of materials†	34,628	25,337	37,289	14,359
Value of products†	60,481	43,653	62,042	23,988
Value added by manufacture†	25,853	18,317	24,753	9,629
Per wage earner:				
Wages paid	$1,254	$1,180	$1,162	$590
Value of products	6,902	6,284	6,894	3,479
Value added by manufacture	2,951	2,637	2,761	1,396

*Thousands. †Millions.

Progress in Standardization of Bolts, Nuts and Rivets

Progress was reflected from the reports made by six sub-committees at a meeting of the sectional committee of the American Engineering Standards Committee on the standardization of bolt, nut and rivet proportions, held recently in New York.

In the discussion of the report of sub-committee No. 1 on small rivets having a diameter of 7/16 in. and under and the report on tinners', coopers', and belt rivets, slight changes in certain of the proposed dimensions were recommended. The report of the sub-committee on wrench head bolts and nuts and wrench openings included tables covering the various types and finishes of hexagonal and square bolt heads and nuts. A number of important changes and simplifications in the standards proposed in the report were recommended. The chairman of sub-committee No. 3, E. Winsor Reed, on slotted-head screws, moved for approval of the committee's report after slight changes had been made in some of the head dimensions. This sub-committee is not in agreement as to the publishing at this time standard screw and thread lengths.

A progress report was presented by the sub-committee on track bolts and nuts. The work of this committee includes the head, neck and body dimensions of proposed standards for two track bolts, one with an elliptic neck and one with an oval neck. The types of bolt and dimensions are identical with those of the report of a committee of the American Railway Engineering Association. It is planned to submit at a subsequent meeting a revised report on track bolts, and to include recommendations for standard track nuts. Supplementary tables were submitted by sub-committee No. 5, on round unslotted heads. These are additional to the standard dimensions for the heads of common carriage bolts, fin-neck carriage bolts, ribbed carriage bolts, step bolts, countersunk carriage bolts and button-head machine bolts, which had been previously approved, and contain recommended standard lengths of these screws and their corresponding thread lengths. Proposed standard dimensions for plow bolts were submitted for sub-committee No. 6 by O. B. Zimmerman, National Association of Farm Equipment Manufacturers. Four different bolts of this type, both regular and repair, are taken up. The tables forming this proposed standard include dimensions of the head, body and the thread length.

Associated Employers of Indianapolis Elect Officers

INDIANAPOLIS, Feb. 16.—W. B. Harding of the G. & J. Tire Co. was elected president of the Associated Employers of Indianapolis at the meeting of the board of directors Feb. 11. Alfred Kauffmann, Link-Belt Co., was elected first vice-president; J. Martin Antrim, of R. W. Furnas Ice Cream Co., second vice-president, and J. Edward Stilz, Kiefer-Stewart Co., treasurer. Andrew J. Allen, who has served as secretary for many years, has been reappointed. William L. Taggart of the Taggart Baking Co. was appointed to fill the unexpired term of two years as a director of Alex L. Taggart, who has gone to New York to become vice-president of the recently organized Continental Baking Corporation, of which the Taggart concern here is a part.

The association has also announced that plans have been abandoned to have Dr. Gus W. Dyer address a joint meeting of the association with the National Metal Trades here the latter part of the month. Dr. Dyer cannot be secured until some time in April.

Machinery Exhibition at Chicago

The Marshall & Huschart Machinery Co., 17 South Jefferson Street, Chicago, will hold an exhibition of machine tools under power in its show rooms during the week beginning March 2. More than 30 machines representing the latest developments in machine tool design will be operated under conditions closely paralleling those of an actual production shop. Work from shops in the Chicago district has been loaned for the exhibition, so that truly typical operations will be performed by practically every machine on the floor. The exhibit will embrace the products of 21 manufacturers whose demonstrators will operate the various machines and explain the details of construction and operation to visitors. The exhibition will be kept open every evening except Monday and will close Saturday noon. The manufacturers who will show their products are as follows:

Abrasive Machine Tool Co., Acme Machine Tool Co., Baker Brothers, Blanchard Machine Co., Bullard Machine Tool Co., Cincinnati-Bickford Tool Co., Cincinnati Milling Machine Co., Cincinnati Planer Co., Cochrane-Bly Co., Giddings & Lewis Machine Tool Co., Gould & Eberhardt, Keller Mechanical Engineering Corporation, Landis Machine Co., Lodge & Shipley Machine Tool Co., Moline Tool Co., National Automatic Tool Co., Oilgear Co., Oliver Instrument Co., Sebastian Lathe Co., Sipp Machine Co., V & O Press Co.

Contract for Steel Barges

BIRMINGHAM, ALA., Feb. 16.—The Federal Inland Waterways Corporation, operating barge service on the Mississippi and Warrior rivers, the latter in Alabama alone, has made contracts with the Tennessee Coal, Iron & Railroad Co. for the purchase of 36 steel barges, now delivered, at a price of $732,655 and to have 24 more barges constructed, at an estimated cost of $450,000. The barge service on the Warrior River is to be otherwise improved and expectations are that when the State of Alabama completes the port of Mobile development, on which $10,000,000 will be spent by the State, a large amount of export business in iron and steel products will be worked up from the Birmingham district.

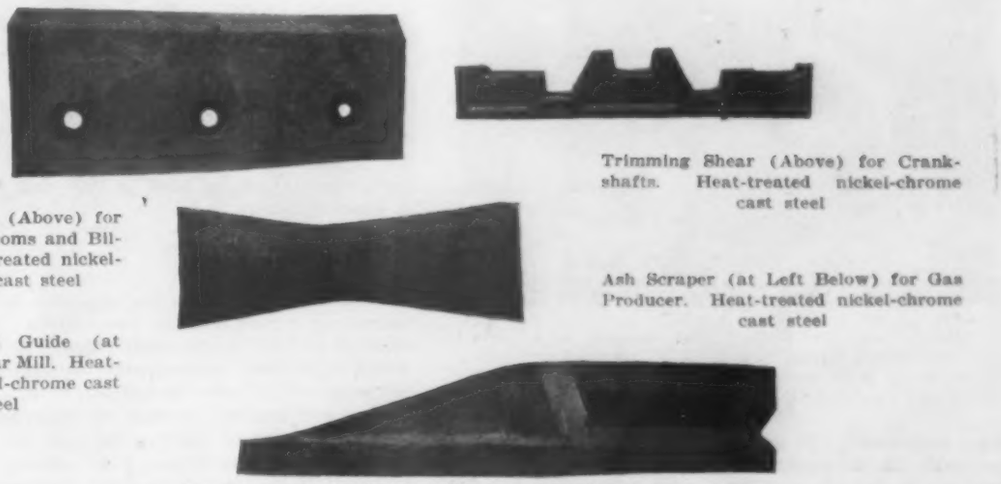
Making Steel Castings Stronger—II*

Their Metallurgy and Heat Treatment—Foundry Problems—Addition of the Alloys—Physical and Dynamic Properties

BY CHARLES McKNIGHT, JR.

THE physical properties of steel are affected by such a number of variables and the effect may be so great that it is extremely difficult to state concisely all that may be expected from the different types. The size of the casting, the condition of the metal, the heat treatment, the varying amounts of the alloying elements and particularly of carbon, all are potent factors in determining what the results will be.

In general of the three types mentioned, the nickel-chrome will be most useful when great strength and hardness are required. As indicated already, it makes up the majority of alloy steel tonnage and fills the demand both for quality and low cost. Although amply tough for the majority of purposes, it is excelled by the straight nickel steel in this respect, as well as that of dynamic strength. Nickel-manganese fills the need for a cheaper steel with very good properties and, heat treated, it shows good tensile characteristics with marked shock resisting power. Its best values are developed only in the heat-treated condition.



Shear Blade (Above) for Cropping Blooms and Billets. Heat-treated nickel-chrome cast steel

Trimming Shear (Above) for Crankshafts. Heat-treated nickel-chrome cast steel

Ash Scraper (at Left Below) for Gas Producer. Heat-treated nickel-chrome cast steel

Rolling Mill Guide (at Right) for Bar Mill. Heat-treated nickel-chrome cast steel

Above Photographs by Crucible Steel Casting Co.

Tensile Properties of Alloy Steel

The following table shows what properties may be obtained with these steels. The values given are not above the average and can reasonably be expected under ordinary circumstances. These figures are based on a carbon content of 0.30 to 0.40 per cent with the steel in the annealed state.

	Elastic Limit, Lb. per Sq. In.	Tensile Strength, Lb. per Sq. In.	Elongation, Per Cent	Red. of Area, Per Cent
Carbon steel	25-35,000	55- 65,000	20-25	30-35
High-carbon steel	30-40,000	65- 70,000	15-20	25-30
3 per cent nickel.	55-65,000	85- 90,000	23-28	33-38
Nickel-chrome ..	55-65,000	90-100,000	18-23	28-33
Nickel-manganese	50-60,000	80- 90,000	18-23	28-33

These figures seem low in comparison with some already quoted, but the criticism can not be made that they are extravagant and it will be realized that, when given suitable heat treatment, the properties will be proportionately increased.

Produced by Any Process

Commercially, alloy steel for castings is generally made either in the open-hearth or electric furnace, though there is still a small production from the crucible and converter. Of late the production from the electric furnace has had a phenomenal growth which seems entirely justified by the quality of the casting so produced.

The choice of whether the acid or basic process should be used is very much in favor of the former. While this is justified in the case of the open-hearth, there may be some question about the superiority of the acid electric furnace product, although it must be admitted that the comparative ease and rapidity of operation and viscosity of the slag, together with a consideration of the fact that a preponderating tonnage is thus made, seems to indicate the practical advantages[5].

Adding Alloys to Steel

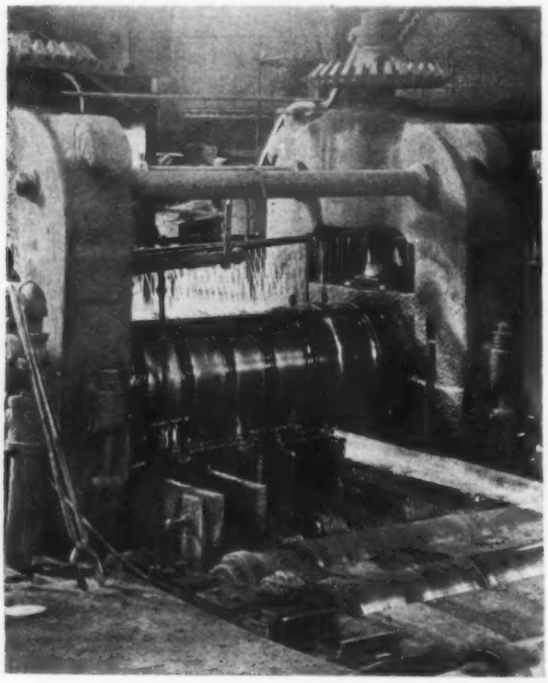
At all events, whether open-hearth or electric furnace, basic or acid process, the addition of nickel to the steel is simplicity itself. Usually a certain proportion of nickel steel scrap as shop reverts, such as risers and defective castings, is made part of the initial charge and from it is recovered all of the contained nickel. To bring the nickel content of the bath up to the desired figure, metallic nickel in either pig or shot form is employed. This may be added at any time during the progress of the heat because none is lost by oxidation, as is the case with almost all other alloys, but it should preferably be in the bath at least half

*The first half of this article appeared in THE IRON AGE, Feb. 12. The author is in the Development and Research Department, International Nickel Co., New York.

[5] "Alloy Steel Castings from Electric Furnace." L. J. Barton; THE IRON AGE, Sept. 21, 1922.
"The Manufacture of Acid Electric Steel for Commercial Castings." L. J. Barton; *Trans., A. S. S. T.*, April, 1924.

an hour before the metal is tapped to insure thorough dissemination throughout the steel.

The addition of chromium, while fairly easy and yielding reliable results after a little experience, is more difficult due to the fact that there is an oxidation loss. Using the open-hearth, if scrap containing chrome is charged, it will be found that a large part of the chrome is lost by the time the steel is melted down. Therefore the desired chromium content is obtained by adding to the bath late in the progress of the heat a calculated amount of ferrochromium, which usually contains 60 to 70 per cent chromium and can be obtained in three ranges of accompanying carbon. In making this addition in the open-hearth it is necessary to allow for the oxidation loss that is known only



Adamite Bar Mill Rolls. This material is a high-carbon nickel-chrome cast steel, widely used for balls on account of its wearing qualities. American Adamite Co. photograph

from experience. It usually amounts to from 5 to 25 per cent. In the electric furnace this loss is very much less and is, in fact, negligible with a properly run furnace. A further complication accompanying the manufacture of steel containing chrome is that this element tends to make the slag sticky and disagreeable to work with, but this is a minor consideration and the melter soon learns to deal with it.

There has always been somewhat of a haze of mystery about the manufacture of alloy steel, which the makers of it were not anxious to dissipate. Happily the war changed this condition materially and now it can be said without hesitation that anyone who habitually produces really good, sound carbon steel castings can do the same in alloy steel.

The art of founding is so complicated and so essentially one which can be acquired only by long experience that it would be unwise to attempt to deal with the subject here. But it should be kept in mind that the best foundry practice is required for these steels. They are heavy pipers and require large risers and the internal stresses set up on cooling are more severe than in ordinary work, for which reason no time should be lost in shaking out the castings and getting them into the annealing furnace. The placing of gates and risers should be carefully considered as well as the design of the casting itself.

Heat Treating Alloy Steel Castings

The majority of castings, according to a leading authority a few years ago,[6] were not heat treated but the present trend is definitely toward universal heat treatment of castings on account of the many advantages to be obtained.

If this is true for ordinary castings it is doubly true for alloy castings and it is questionable whether it is worth the money to add an alloy to a casting and then use it in the raw state. It is conceded that the optimum values are only obtained in rolled and forged alloy steels after very careful treatment. How much more necessary, then, is it to heat treat castings whose originally coarse ingot structure has never been refined by the mechanical work of rolling or forging and in which the casting strains may closely approach the elastic limit of the steel.

Homogenizing Treatment

The oldest and simplest heat treatment consists in annealing the steel at a temperature slightly above the critical range and allowing it to cool slowly, as in the furnace or an annealing pit. Although this method is entitled to the veneration due age, it is giving way in more progressive foundries to the so-called homogenizing treatment. This is carried out at the relatively high temperatures of 1550 to 1700 deg. Fahr. and even in some instances as high as 1800 deg. Fahr. At these temperatures the coarse dendritic structure of the raw casting is broken up and, if the process is properly and completely carried out, replaced by a homogenous structure consisting, in the medium carbon steels, of intimately mixed pearlite and ferrite. The casting is allowed to cool fairly rapidly from this first heating, which is followed immediately by reheating to a lower temperature in order to refine the grain further and relieve any cooling stresses set up. Some authorities also favor a rapid cooling through the critical range and then a prolonged cooling to ordinary temperatures, attempting in this manner to eliminate the second heating.

Large castings and intricate castings subject to warping and cracking are best treated in the manner outlined. They should be slowly heated up to the correct temperature and allowed to soak for several hours. Removed from the furnace, they are cooled in the air to normal temperatures and are then drawn back by heating to 1000 to 1300 deg. Fahr., for several hours. Cooling may be either slow or rapid from the drawback, but best results seem to be obtained with a quick

[6] "The Steel Foundry." John Howe Hall, McGraw-Hill, 1922.

Table of Tests on Mild Nickel Steel Castings

Analysis

C.	0.26	Ni	1.76
Mn	0.90	S.	0.02
Si	0.18	P.	0.04

No.	Treatment	Static Tensile: Elastic Limit, Lb. per Sq. In.	Static Tensile: Tensile Strength, Lb. per Sq. In.	Static Tensile: Elongation, Per Cent	Static Tensile: Reduction of Area, Per Cent	Impact Tensile: Strength, Kg-m.	Impact Tensile: Elongation, Per Cent	Resiliency: Charpy K-m/Cm²	Resiliency: Bend Test
1.	1475° F. for 4 hr. rapid cooling in air completely cooled in 1 hr	56,000	96,000	15.0	14.0	106	12	5.1	Good
2.	Same as No. 1; Then drawn 1 hr, at 1290° F. cooled in 6 hr	52,500	86,800	21.0	22.5	117	27	7.5	Good
3.	Heated 1475° F. for 4 hr. followed by slow cooling in furnace, requiring 18 hr	52,000	92,200	28.5	39.8	145	35	8.22	Good
4.	Heating and cooling as in No. 3, then drawn at 1290° F. for 1 hr., followed by slow cooling (6 hr)	52,600	91,700	33.0	52.8	142	33	9.31	Good
5.	Piece of casting forged and heat treated for comparison	.....	99,500	17.0	...	...	..	...	....

As Heat-Treated

Photomicrographs of Heat-Treated Nickel-Chrome Cast Steel. Carbon, 0.35; nickel, 1.20; chromium, 0.58; manganese, 0.57; silicon, 0.35; sulphur, 0.035; phosphorus, 0.015 per cent. Magnification, 100 diameters

As Cast

cooling. Sometimes the castings are quenched from this temperature.

Quenching Small Castings

Small castings which are not liable to crack and warp are best treated by quenching from the first heating in either oil or water and then drawing back to 1000 to 1300 deg. Fahr. Tendency toward cracking is minimized by putting them in the drawing furnace before they are entirely cold from the quench.

While higher physical properties can usually be obtained with the oil quench and draw treatment, the first method outlined has unquestioned advantages. Breakage is practically eliminated, warpage is very low and the process is so simple that it has been found in practice to be a saving in time and money over the time-honored annealing process. Incidentally, it might be pointed out that this treatment is now finding favor for the heat treatment of large forgings.

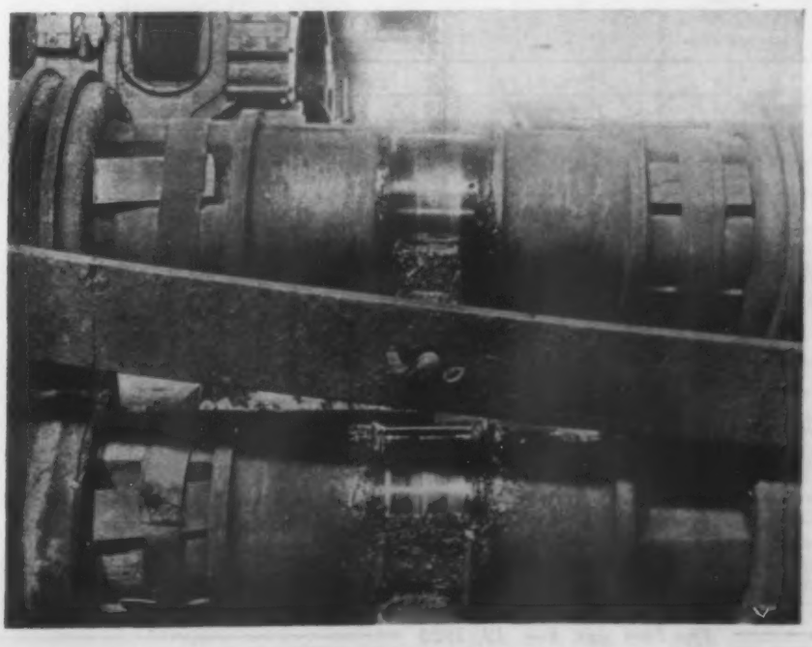
Dynamic Values

The subject of heat treatment of castings is covered in great detail by Dr. Giolitti in the book already referred to[7] and from it is taken the accompanying table giving the results on a heat-treated casting. It is most interesting to note the varying impact values. For so long the engineer has thought in terms of the static tensile test that it has assumed a disproportionate value in his mind. One result of this has been that it is often asserted that a mild carbon steel casting without heat treatment is tougher and more ductile than one which has been heat treated, but it only requires a brief comparison of the dynamic properties of each to see that it is extremely fallacious to hold any such view[8].

The development, uses and manufacture of nickel and other alloy steel castings have been outlined. The development has by no means ceased and new uses are being found almost daily for alloy steel castings, thus opening up a tempting and remunerative field to those foundries who wish to avail themselves of it, while at the same time a new material for manufacture and design is offered to engineers and executives who can recognize the value inherent in these castings.

[7] See note 1.

[8] "Heat Treatment of Alloy Steel Castings." A. W. Lorenz, American Foundrymen's Association, 1923.
"Better Steel Castings Required." H. A. Neel. *Foundry*, 1919, p. 825.
"Problems Involve Changes." *Foundry*, 1919, p. 459.
"Properties of Nickel Cast Steel." THE IRON AGE, Aug. 8, 1912.
"Heat Treatment of Cast Steel." Hall, Nissen and Taylor. *Proc.*, A. I. M. M. E., Vol. LXII, 1920.
"Making Steel Castings as Tough as Forgings." L. R. Mann, THE IRON AGE, Vol. 112, No. 7, p. 425.



Mill Drive Spindles. Cast nickel steel. Pittsburgh Iron & Steel Foundries photograph

TREND OF IRON AND STEEL MARKETS

1. Steel production has crossed the line of long-time trend and is above normal. Pig iron production is up to trend, allowing liberally for normal growth. The percentage of blast furnaces active now exceeds the widely mentioned 60 per cent limit.

2. Either production must be checked and the price structure continue weak, or the consumption of iron and steel must prove to be considerably greater than has seemed possible.

3. The rise in iron and scrap prices has been checked. The ***rate of increase*** *in steel prices has declined. Downward readjustments in steel prices would seem logical, and may be forced before the second quarter is over. Except for imports, the statistical position of iron is stronger than that of steel.*

4. That demand can hardly be expected to support higher prices is indicated by the relatively low volume of unfilled orders—low in comparison with both production and price.

BY DR. LEWIS H. HANEY
Director, New York University Bureau of Business Research

Steel: Demand, Supply and Price

STEEL production has reached a point well above the normal trend. Fig. 1 indicates that production in January was greater than at any time since August, 1923.

The increase in steel production for the six months since July, 1924, as reflected in the adjusted index of trend, has been from 64.8 to 119.8, a total increase of 85 per cent. This compares with an increase of but 52 per cent for the six months following the low point in 1921. The comparison is the more striking when it is considered that the 1924 recovery started at a point 67 per cent higher than the low month in 1921.

The rapidity of the increase is further emphasized by the fact that six months of recovery have carried production to a point hardly 9 per cent below the 1923 peak—a peak which was reached only after nearly two years of recovery.

Reasoning solely on the basis of the past, it is about time to look for indications of a turning point.

Fig. 1 shows that steel production has been increasing faster than unfilled orders. The spread between the unfilled orders and the production curve was greater at the end of January than at any time since the beginning of the recovery. In the past, when production has been high compared with unfilled orders, it has foreshadowed declines either in production or in unfilled orders, or both.

Fig. 1 shows that, during the two-year recovery in production from the 1921 depression, unfilled orders were high compared with production. From May, 1923, to July, 1924, however, production was high compared with unfilled orders. The chart clearly indicates that the gain in production has been entirely too rapid in comparison with unfilled orders. Much the same conclusion may be drawn from a comparison of unfilled orders with steel prices.

THE IRON AGE composite of steel prices showed a further increase in January. Although the recovery in steel prices has not been very pronounced, it is to be remembered that the decline during 1924 was relatively small.

Considering the relatively low level of unfilled orders, the high rate of production and the increasing activity among importers, it seems that the steel market hardly can be expected to show strength in the near future.

Though no figures are available, it does not seem unlikely that steel is being stored. Indexes of demand in the leading steel consuming industries are below the 1923 and early 1924 levels, and do not warrant the expectation of higher steel consumption.

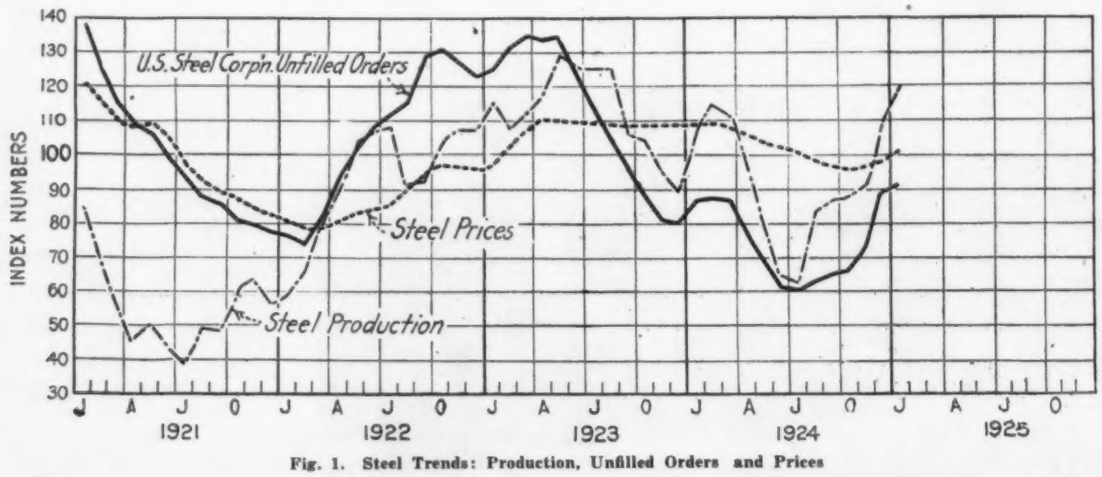


Fig. 1. Steel Trends: Production, Unfilled Orders and Prices

The price curve represents the movement of THE IRON AGE composite index of finished steel. The production curve represents the true trend of ingot output, the monthly figures of the American Iron and Steel Institute being adjusted to eliminate normal growth and the merely seasonal variations. The unfilled orders are as reported by the United States Steel Corporation, adjusted to eliminate seasonal variation

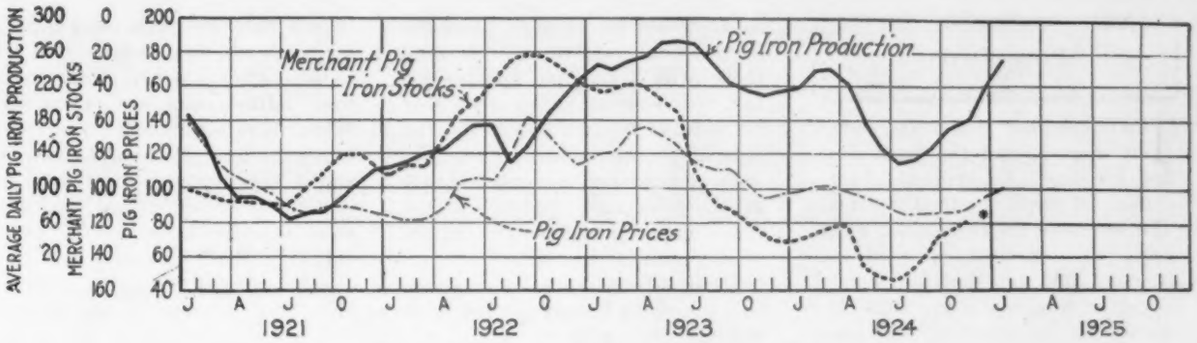


Fig. 2. Iron Trends: Production, Stocks and Prices

The production curve is the average daily production of pig iron, adjusted to eliminate the usual seasonal variations. (This curve differs from the steel production curve in that the long-time trend has been eliminated.) The curve showing trend of stocks is drawn on an inverted scale, so that the low points represent the accumulation of large stocks. The price curve shows the trend of THE IRON AGE composite for pig iron

Pig Iron: Production, Stocks and Price

FIG. 2 shows that the total *production in January, after correction for normal seasonal variation, was even greater than in March,* 1924, *and was exceeded in only four months of the* 1923 *peak year.*

Pig iron production in January, at a daily rate of close to 109,000 tons, was the largest since the March, 1924, peak. Considering the post-war years, from 1919 to date, this rate has been exceeded in only two periods. During 1923, in the six months from March to August, daily production averaged 118,000 tons. In March, 1924, production reached an average daily rate of approximately 112,000 tons. The question arises as to whether such high rate of production is justified by the statistical position.

Figured on the most liberal allowance for normal growth, pig iron production is now at a level well up to the long time trend. Any considerable increase is practically certain to bring a condition of overproduction and lead to a decline in prices.

As has been pointed out in preceding articles, the outlook for those industries which consume the bulk of the iron and steel produced does not seem sufficiently favorable to support peak production, especially when the domestic output is increased by considerable imports. *The conclusion is that the present rate of production can be maintained only at the expense of prices.*

In view of the prevailing high rate of production, stocks probably have not been reduced materially during the last few months. November, the last for which figures are available, showed a slight decrease, and in December a further small decline probably occurred. It is rather likely that January will show production in excess of shipments. The increasing imports of pig iron and uncertainty as to future prices have tended to cause a slowing up of pig iron shipments, particularly on the seaboard.

Incomplete figures for January indicate that imports of pig iron for that month have exceeded the high December figure. It is reported that approximately 5000 tons of pig iron were imported at Philadelphia alone in the first week of February, which suggests still larger figures for this month.

The price curve shows that the average was higher in January than in December. THE IRON AGE composite pig iron price, however, has remained unchanged for five weeks, and there is considerable resistance to higher prices. At the same time dealers are reluctant to reduce prices, as they hope for an improvement in the situation.

On the supply side we have these factors:

(1) High production
(2) Relatively high stocks
(3) Increasing imports

The demand side of the equation is not such as to create enthusiasm over the outlook. The leading markets report continuance of absence of buyer interest.

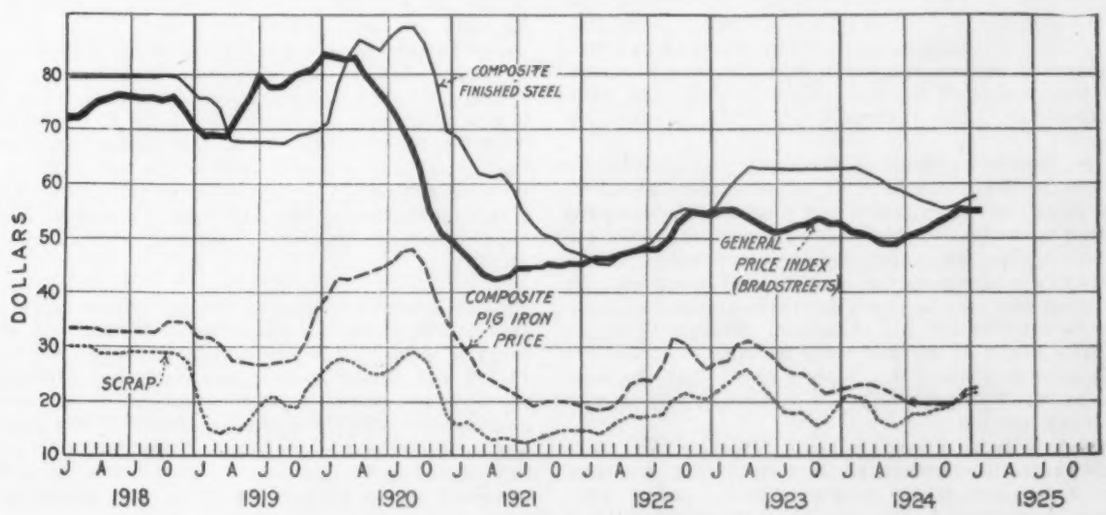


Fig. 3.—Price Trends in the Last Two Cycles

The iron and steel price curves are THE IRON AGE composites. The general price curve is the Bradstreet index *which has been multiplied by four* to make it more fairly comparable with the trend of iron and steel prices

Price Trends

TWO complete cycles are shown in Fig. 3, and the light dash line indicates the approximate location of three cyclical bottoms. The second of the two cycles, which apparently came to an end last summer, did not show so wide a swing as occurred in the 1918-1921 wave. It is strikingly apparent that steel prices were hardly "liquidated" in 1924, and the fact that the prices of iron and scrap had a premature and untimely advance, in the early part of 1924, is indicated.

A study of the trend of the data shown in Fig. 3 suggests two alternatives for the future, either a period of relative stability or a period of moderately declining prices. Certainly it is difficult to visualize any large increases occurring at the end of such a series.

The latest data show that the rise in iron and scrap prices has been checked, though, being monthly averages, the figures do not show the decline which occurred in the latter weeks of January. The *rate* of increase in the composite steel price index clearly has fallen. Between November and December there was a gain of 2.3 per cent in the composite average; between December and January the gain was only 0.7 per cent.

It would be easy to push the hypothetical reasoning concerning these price series and spreads too far, but *it seems fairly clear that the demand for iron and steel—and especially the latter—is not at present sufficient to carry through on the price rise.* In view of the sharp gains in production, the obvious hesitation in prices is not unnatural. That there has been no sharper setback may be taken to indicate the existence of a fairly good demand. Apparently, however, *the present demand intensity is not of the stuff out of which booms are made.*

On the basis of the trends shown in the past two cycles, the iron and steel industry should now be on the eve of a sharp and long continued series of price advances, but one can hardly consider this a possibility in the light of recent developments and the thought occurs that, if conditions are so different from usual, perhaps we are not at the beginning of any prolonged upturn.

As a rule, the general price indexes lead the price of steel by several months, as is indicated by the graph. The fact that the advance in the general price average has been halted suggests the possibility that the steel price situation reflects a fundamental condition.

In considering the spreads between iron and steel *it seems fair to say that the price of pig iron is relatively low, while that of finished steel is high.* Accordingly some adjustments are called for. What these adjustments are to be is not certain. Perhaps as reasonable a suggestion as any would be that the price of finished steel will have to come down, on the average.

The price of scrap, too, appears high with relation to the general iron and steel structure. There has been considerable speculation in scrap of late and, while undoubtedly there is a greater use of old material than formerly, *the recent weakness in the scrap market appears to be fundamental.*

It is interesting to contrast the present situation with that at the beginning of the recovery from the 1921 depression. In that period (at the end of 1921) the production of pig iron increased more rapidly than that of steel for a time, and a somewhat similar condition has obtained recently. But, on the price side, steel was moving down in 1921, and iron prices, while declining somewhat, were rather stable. Now, however, steel prices are holding up after a period during which there has been but little decline and show clear evidences of a "stabilizing" process. Again the conclusion may be drawn that it will be difficult to maintain steel prices at the recently announced levels.

THRIFT TEACHING NEEDED

New England Foundrymen Listen to Addresses on Timely Subjects

"Stabilizing Production and Profits" and "Thrift" were the subjects discussed at the February meeting of the New England Foundrymen's Association, held on the evening of Feb. 11 at the Exchange Club, Boston. Joseph H. Barber, assistant to president and head of planning section, Walworth Mfg. Co., South Boston, was the speaker on the first subject, and Harold Mills, Metropolitan Life Insurance Co., the speaker on "Thrift."

Mr. Barber's address in substance was an analysis of how the Walworth Mfg. Co. plans months ahead its production, inventory, costs and profits. The company started its budgetary system about ten years ago, but in making its tables for comparison, records of the company's business as far back as 1890 are used. He explained that the ups and downs in all lines of business do not rise and fall in unison. Prosperity in one business might be enjoyed while another is still in the cycle of depression. Mr. Barber stated that the business of the Walworth Mfg. Co. follows closely that of the stock market.

Quoting from a local banking authority, Mr. Mills made the rather remarkable statement that not more than 9 per cent of the people in this country have money in savings banks, and that if all methods of savings are taken into consideration, not more than 20 per cent of the people of the country can be classified as savers. It was Mr. Mills' idea to impress upon those present that the business of saving money has the greatest possible influence on business of the country in general. The thrifty workman is a better workman, not only for the man he is working for, but for his community and his country. He is less inclined to change his position and therefore does a great deal to stabilize the shifting of labor.

What the country needs, he declared, is a systematic teaching of thrift. The Liberty Loan drives, in his opinion, were the only real efforts in this line, but people are beginning to lose the effect of those drives. He said the only effort being made today to teach people to save is through the schools, and that savings by school children are increasing each year.

At a short business session of the association prior to the addresses, Hickman, Williams & Co. were admitted to membership. F. R. Harrington, president of the association, who presided at the meeting, was instructed to appoint a committee on resolutions to take action on the recent death of S. M. Thompson, foundry superintendent, Barbour Stockwell Co., Cambridge, Mass.

The annual meeting of the British Columbia division of the Canadian Institute of Mining and Metallurgy is being held in Vancouver, B. C., this week, Feb. 18, 19 and 20. Economic and industrial problems of the province generally were considered at the meeting, and one day was devoted to a survey of the potential and actual resources of British Columbia, with a view to stimulating interest in the opportunities of new enterprises. Taxation problems were also discussed.

Severn P. Ker, president, states that the Sharon, Pa., and Haselton plants of the Sharon Steel Hoop Co. are now being completely electrified. The company's present ingot capacity is somewhat over 300,000 tons per year, and rolled steel the same.

In This Issue

Data showing steel consumed in each State now available. For the first time, definite information on the relative importance of each State as a market for various steel products is made public.—Page 539.

Will steel prices hold? "Either production must be checked and the steel price structure continue weak or the consumption must prove to be considerably greater than has seemed possible," economist declares.—Page 558.

Worked in same department since civil war. In one department since 1865, Jacob Peterson, Bethlehem employee, is pensioned.—Page 596.

January building contracts close to record. Aggregating over 296 million dollars, January building contracts in 36 States reach highest total for first month of any year except 1924.—Page 597.

Outlook for pig iron prices. "The outlook is that the present rate of pig iron output can be maintained only at the expense of prices," says business analyst.—Page 559.

Impact tensile strength considerably increased by heat-treating. A gain of as much as 37 per cent in impact tensile strength of alloy steel castings can be obtained by proper heat-treating.—Page 556.

Trade remarkably steady. As a whole, trade in the United States has been remarkably steady for the past three years. Fluctuations relatively minor.—Page 565.

Freight shipments establish new record. Car loadings for four weeks ended Jan. 24 totaled over three and one-half millions, 5 per cent above previous high record for same period.—Page 597.

Pattern storage problem can be solved. One man should be made responsible for foundry pattern storage. Obsolete patterns should be weeded out at regular intervals.—Page 551.

You can always see the contents of these tote boxes. Low sides of tote boxes used by General Electric Co. make visible kind and quantity of contents. Guide pins at corners permit safe stacking.—Page 553.

Large export machine tool order. Fiat Motor Works in Italy buys 200 American machine tools. Sizable Russian order in sight.—Page 599.

Alloy steel castings not difficult to make. Mystery no longer surrounds manufacture of alloy steel castings. Can be made by any foundry turning out good quality of carbon steel castings. Large risers necessary.—Page 556.

Tells how to stabilize coal industry. Storage of 16 to 17 per cent of output would stabilize coal industry, says Columbia professor.—Page 564.

The fight against rust. Patent complications hinder natural development of rustless ferrous metals in fight against rust.—Page 564.

Prices not reduced by passing of Pittsburgh Plus. Philadelphia fabricator testifies at Federal Trade Commission hearing that steel prices have not been lowered by abolition of Pittsburgh Plus.—Page 567.

Most workrooms are overheated. Government official finds that 68 per cent of workrooms examined had a temperature of more than 70 deg., causing sickness among workers and monetary loss to employers.—Page 563.

Are scrap prices high? "With relation to the general iron and steel price structure, the price of scrap appears high."—Dr. Haney.—Page 560.

Europe takes little American iron and steel. Less than 6 per cent of our exported iron and steel went to Europe in 1924. American countries took almost two-thirds of total.—Page 595.

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MINING ENGINEERS

New Officers for Next Year—Many Metallurgists Attend Annual February Meeting

NEW YORK, Feb. 17.—At the annual business session this morning of the American Institute of Mining and Metallurgical Engineers, which is holding its 131st meeting at the Engineering Societies Building, New York, this week, J. V. W. Reynders, consulting engineer, 120 Broadway, New York, was elected president for the ensuing year. Two new vice-presidents were named: Ralph H. Sweetser, superintendent of blast furnaces, American Rolling Mills Co., Columbus, and John L. Agnew, mining engineer, Copper Cliff, Ontario, Canada. After brief remarks by the president, William Kelly, Iron Mountain, Mich., on the developments during the past year, Secretary F. F. Sharpless presented a brief abstract of his annual report. He stressed in particular the fact that during the past year there had been another loss of membership resulting in a decline of 10 per cent in the last three years. This was ascribed largely to economic conditions, particularly last year, and the hope was expressed that some of the losses would be made up during 1925. The report of the treasurer, Charles F. Rand, New York, revealed the fact that the society is in a splendid financial condition, in strong contrast to the situation about five years ago.

Sidney H. Ball, mining engineer, New York; George D. Barron, Rye, N. Y.; William H. Bassett, American Brass Co., Waterbury, Conn., and Charles F. Rand, New York, were reelected to the board of directors, and J. M. Callow, consulting engineer, 50 Broad Street, New York, was added to it.

The usual sessions on steel, coal, oil and other industries covered by the institute are being well attended, particularly those of the Institute of Metals division, the papers for which have been eliciting considerable interest and discussion. Only two steel sessions are being held this year, one yesterday and one tomorrow. A large number of prominent metallurgists in the ferrous and non-ferrous field are in attendance. Dr. Carl Benedicks, director of the Metallographic Institute, Stockholm, Sweden, who delivers the annual Institute of Metals lecture this afternoon, has been an active participant in the discussions at the non-ferrous sessions. The annual Henry M. Howe lecture was delivered yesterday by Dr. John A. Mathews, on the subject "Austenite and Austenitic Steels."

A report of the steel and other sessions will appear in THE IRON AGE of Feb. 26.

Overheated Workrooms

An examination of a large number of workrooms indicated that 68 per cent were at a temperature of more than 70 deg. and 15 per cent at 75 deg. and over, said Leonard Greenberg, United States Public Health Service, in a paper on "Industrial Ventilation" presented at the safety conference held in Baltimore, Jan. 23, under the auspices of the Baltimore Safety Council, the American Society of Safety Engineers and the engineering section of the National Safety Council. Such conditions were stressed as causing monetary loss. It was stated also that recent industrial studies made by the public health service appear to indicate that the high sickness rate from colds among industrial workers must be ascribed, in part at least, to such conditions. The remedy was said to be in providing one or more thermometers in the workroom and in the intelligent supervision of the windows and heating unit.

The morning session, presided over by G. W. Knapp, Jr., National Enameling & Stamping Co., Baltimore, included several addresses, a symposium on safety kinks, safety equipment and educational stunts by six speakers representing as many industries. An address on "Electrical Safety Switches," by R. L. Allewelt, General Electric Co., Philadelphia, was among others at the afternoon session at which there was also a discussion of first aid material and other safety equipment. "Industrial Lighting" was the subject of a paper by Charles J. Stahl, manager illuminating engineering bureau, Westinghouse Electric & Mfg. Company, South Bend, Ind.

Dr. Loyal A. Shoudy, Bethlehem Steel Corporation, Bethlehem, Pa., spoke on "The Doctor, the Foreman and the Man," at the evening session.

The Standard Sanitary Mfg. Co., Pittsburgh, was organized Feb. 4, 1900, and in observance of the silver anniversary a dinner was held at the Duquesne Club, Pittsburgh, Wednesday evening, Feb. 4. Theodore Ahrens, president, and E. L. Dawes, a director of the company, the surviving organizers, were the guests of honor at the dinner, which was attended by 100 officials of the company, including those from the plants at Louisville, Ky., and Baltimore.

The Krupp corporation, which now employs 71,320 persons, has lost heavily as compared with 1913. Main causes of the loss are (1) depreciation of large mark holdings, and (2) destruction of plant under the Versailles Treaty. In all 9173 machine tools, or 44 per cent of the whole, were destroyed or dispersed.

British Pig Iron and Steel in January

LONDON, ENGLAND, Feb. 16 (*By Cable*).—The pig iron production in January was 569,400 gross tons, comparing with 580,300 tons in December. It was considerably less than the 1924 average of 609,900 tons per month.

The total January steel output was 605,100 tons, which was an increase over the December figure of 551,000 tons. It was, however, about 80,000 tons less than the 1924 average of 685,100 tons per month.

Comparative production figures for the British steel industry in gross tons per month are as follows:

	Pig Iron	Steel Ingots and Castings
1913, per month.....	855,000	639,000
1920, per month.....	669,500	755,600
1921, per month.....	217,600	302,100
1922, per month.....	408,300	486,000
1923, per month.....	619,800	707,400
1924, per month.....	609,900	685,100
January, 1925	569,400	605,100

Stress Generation in Hardened Steel

Stress generation in hardened tool steel and the present status of the wear test program are outlined in the twelfth progress report of the gage steel committee. This report, which is designated as communication No. 19, includes 17 mimeographed pages, five pages of tables and six blue-printed curves and charts.

Under stress generation in hardened tool steel are included an experimental study of cracking on quenching; analysis of stress generation; expansion phenomena of hardening; temperature distribution during quenching; relation of quenching stress to temperature drop; control of internal stress; and a summary of observations on internal stresses, in which the principal facts developed in the preceding sections are recapitulated.

In a section on wear test results, the present status of the service and laboratory wear test program is stated. H. W. Bearce, Bureau of Standards, Washington, is secretary of the committee.

The Youngstown Sheet & Tube Co., third largest steel producer in the country, is now the largest corporation in Ohio, employing about 25,000 workers. It operates 12 plants, located in eight different States, and manufactures over 100 different products. The company is fully self-contained. The principal headquarters are at Youngstown.

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A Winning Fight Against Rust

HERE is increasing reason to believe that the problem of iron and steel corrosion is within measurable distance of solution. At least the metallurgical side of it is well advanced, notably in the development of stainless iron as a material which meets most of the conditions under which steel fails from exposure to corroding agents.

One method for the manufacture of this rustless product was discussed in the last issue of THE IRON AGE. Strong claims are made for what is there described as the direct process—obtaining the essential chromium from the ore instead of from the ferrochromium. There are also several patented direct processes, both British and American, with the usual legal complications. Besides these, there remains the well-established indirect method by which the required high chromium content is secured by adding low-carbon ferrochromium to the steel bath. This is necessarily an expensive process, in the present stage of development, because of the high cost of the ferroalloy. Both the direct and the indirect processes are costly. Which is the more so cannot be discussed here. Correctly made by either, stainless iron, because of its ductility, can be rolled into most forms in which steel is now used.

The imagination readily pictures the large possibilities of life extension in the substitution of such material for that which crumbles and disappears under common conditions of service. Unfortunately, patent complications, which involve all rustless iron processes, are holding up their development on a commercial scale. The product is being made by one or two American companies and on a limited scale in Great Britain, with considerable success. But progress has been slow.

Forty years ago aluminum was a curiosity. Its remarkable properties were recognized and great things were prophesied. Its cost was the drawback. Today the overcoming of that difficulty and others is a familiar story and aluminum is one of the indispensable metals of industry. That history will repeat itself in stainless iron need not be doubted. The legal obstacles will be overcome. Simplification of processes and production in quantity, whether by the direct or the indirect method of supplying chromium, are to be expected. In respect to cost, some of the discussion has turned on the possible applications of stainless iron to uses calling for large tonnages. The claim has been made with some confidence that when made on a large scale the cost would be such as, taking account of its considerable addition to the life of steel, would establish it on a commercial and competitive basis.

A Parliament to Regulate Coal

PROF. JOHN E. ORCHARD of Columbia University contributes to the forthcoming *Quarterly Journal of Economics*, published by Harvard University, an article containing a proposal for regulating the coal industry of the United States. Conditions in the industry are carefully reviewed and comparison is made with conditions in the British and German coal industries. It is shown, among other things, that variable exports can do much to smooth out irregularities of operation. The conclusion of the Storage of Coal Committee of the American Engineering Council is cited, that to stabilize the industry the storage of only 16 to 17 per cent, or 80,000,000 to 85,000,000 tons, of the annual coal production is necessary. Stabilization should check further overexpansion, which it has been shown is largely the product of the high prices arising out of seasonal demand.

Professor Orchard's proposal is of a coal parliament, to be composed of representatives of "the miner, the operator, the coal merchant, the large consumer, the general public." We quote the words in order to indicate the sequence Professor Orchard gives to the five interests. The representatives should be appointed, he says, by those whom they would represent, while the chairman of the commission or parliament "should be an outsider not connected with any of the groups represented."

Naturally enough, Professor Orchard anticipates objections. He remarks that this is not a

new and untried scheme, that a coal parliament was created by an act of the German Reichstag in March, 1919. We can, however, hardly expect the same amount of receptivity by either the individuals greatly in interest or the general public of the United States, considering how we live now and what conditions in Germany were four months after the war ended. The difficulties and possibilities are pretty well summarized in the concluding paragraph of the article:

> In conclusion, it may be stated that the coal industry does not face a hopeless task in the effort to bring order out of chaos. Overexpansion can be stopped gradually, surplus mines can be closed, and surplus miners can be shifted to other industries. Demand can be increased to some extent. Output can be more evenly distributed throughout the year. But all these changes cannot be expected in an industry in which the conflict of interest is so strongly emphasized. They can be attained only in an industry in which there is a recognition of the community of interests between the component elements. To secure such a recognition, the first step necessary is the bringing together of all the elements of the coal industry into a representative body and the placing of the control of the industry in its hands.

The whole argument reads well and the proposition is attractive when considered at one moment of time, but the actual working out would require a long period. This involves a principle as to human nature that is so general and unchanging in its application that at all times the old words have had point: "The devil was sick, the devil a monk would be. The devil got well; the devil a monk was he!"

Now, in all the gyrations in coal we have witnessed in the past few years, and which are the cause of remedial proposals, we have had alternations. At one time the consumer was sick and the operator well. At another time the consumer was well and the operator was sick. At one time the consumer has been paying $10 a ton for coal, at another time the operator has been losing money. If the project could be launched and put into irrevocable operation in any short period of time, the "recognition of the community of interests between the component elements" could be obtained. This "recognition" would vary widely over any period of time. It would have been one thing in the summer of 1920, when coal was fancy priced without a strike, another thing in the summer of 1922 when it was the same, with a strike, and another thing in the past year when it was very low priced relative to a high cost of production.

Last Days of the Beehive

IN war time those charged with the allocation of coke often said that if the Connellsville district could be brought up to a weekly production of 300,000 tons and kept there, all troubles in meeting the demand would disappear. Recently, when the production of that district went above 200,000 tons in one week, there was an oversupply. When it is considered that almost as many blast furnaces have been in production lately as during the war period, we have a measure of the decreasing dependence of the iron industry upon the Connellsville district, or more properly upon beehive oven coke.

A table published in THE IRON AGE of Jan. 8 showed for the country 11,954 by-product coke ovens built or building on Jan. 1, with an annual coking capacity of 50,838,975 net tons. Ovens built primarily to furnish fuel for iron making totaled 9578, with an annual capacity of 42,234,275 net tons. Actually much more than this amount is available for metallurgical use, for while much coke produced in commercial or gas plant ovens goes to domestic use, a larger part goes to the foundries.

Since the year opened new construction has been started that will further reduce the market for beehive coke. The Jones & Laughlin Steel Corporation is building a new plant at its Woodlawn, Pa., works, that will free it from the necessity of coke purchases, which usually have been of beehive coke. The completion of a by-product plant for the Perry Iron Co. at Erie, Pa., removes another user of beehive oven coke.

Only a few years ago it was predicted that in 15 years the beehive oven would be as obsolete as the finery furnace is today in the sheet steel industry. That estimate now appears too liberal, seeing that by-product coke oven capacity is well located in relation to consumption and that capacity for making such coke now is within 10 per cent of the combined beehive and by-product oven production of 1918, when a record was made at 56,478,185 tons under the stress of wartime demands.

The Steadiness of Trade

JUST when men have been taking a particular interest in "the business cycle," and perhaps on that account, the business cycle has failed to show itself with any clearness. The relative steadiness of trade in the United States in the past three years seems to have escaped receiving much attention. At any rate the steadiness has been but little commented upon.

Relatively minor fluctuations, by being extensively advertised, have been given a prominence that has tended to conceal or cover the fact that trade as a whole has been remarkably steady in the United States from 1922 through 1924. At first glance this statement may be regarded as poorly founded and perhaps even rash, various instances being citable of wide swings in the past three years. That is the point precisely. When these things are set down together, they are found not to coincide in point of time. The course of trade is a composite, and the composite has been rather a drab affair.

To give a brief illustration from Federal Reserve Bulletin statistics, manufacturing production of the past three calendar years was highest in 1923 and next highest in 1924, the differences being approximately the same, and not very large. Mining production showed the same classification of years, but 1924 was much further above 1922 in mining than in manufacturing. Next, crop production showed 1923 not the best year of the three, but the poorest. Again, building contracts awarded showed 1924 by far the best year of the

three. In wholesale trade 1923 was the best year, in department store trade 1924 was a trifle better than 1923, and in mail order sales 1924 was considerably better than 1923.

With these divergent swings in different trade indices, with the uniformity of business failures, and with other points that could be cited, the conclusion is that the course of business as a whole has been steadier in the past three years than it was in the longer past. A broad view has to be taken to reach this conclusion. There are sharp individual movements that would suggest otherwise. A glaring instance of this is the production of steel ingots, which has fluctuated widely if not wildly in the past three years and has sometimes been decreasing when consumption of steel was increasing.

Magnetic and Physical Hardness

DR. HENRY MARION HOWE would have keenly enjoyed hearing the memorial lecture Monday afternoon of this week before the mining engineers in New York. Always a patient and keen-eyed seeker after truth himself, he would have been quick to seize upon the generalization set forth by Dr. John A. Mathews, speaking on "The Metallurgy of Gamma Iron," and the relation between austenite and magnetism. Howe was puzzled by the apparent lack of correlation between physical hardness as measured by the Brinell test, and magnetic hardness, as measured by the action in strong electrical fields. In order to explain all the principal facts, it may be remembered that he was led to postulate two different kinds of beta iron—thus multiplying the commonly accepted allotropic modifications. For once he seemed to forget that the fundamental laws of nature are simplicity itself when we have progressed far enough to express them in understandable terms. And of course this elaborate theory came tumbling to the ground as soon as x-ray analysis proved that not even one variety of beta iron (much less *two*) had any physical reality.

Therefore it was necessary to clear away the wreck and build anew on the strong foundations beneath. Jeffries and Archer did this masterly piece of work in their slip interference theory of hardening—beautiful in its simplicity and, as might easily be contended, highly probable because of that very simplicity. First of all, they decided to consider physical hardness or tensile strength as a property separate and distinct from magnetic and electrical phenomena. That bold step taken, it was then possible to systematize the facts about the hardening phenomena of such diverse metals and alloys as iron, copper, tungsten, lead, carbon steel, manganese steel, brass and duralumin and to show that softness and ductility are associated with regularity in the atomic arrangements in the metallic crystals (a physical quantity it is becoming easier and easier to measure), whereas hardness and strength increase with increasing disorganization in the crystal lattice.

If, with the almost unanimous body of metallurgists, you accept this explanation of Brinell hardness, the mind has no instinctive urge to link up electrical phenomena with small displacements of atoms from their regularly appointed places. It is easy to believe that something more than space lattice is required to explain electricity and magnetism when it is remembered that iron and copper have the same atomic arrangement. Nor will you be appalled with the "topsy-turvy" metallurgy described by Dr. Mathews; steels that grow softer the higher and more drastic the quench, and that harden after a drawing operation!

It will only whet the desire to know more about the real properties of this gamma iron which has been so neglected by metallurgists despite its undoubted influence on the properties of ordinary commercial steels. And with that acknowledgment of ignorance the tentative theory is readily entertained that the magnetic properties of gamma iron are quite definite and quite different from the corresponding properties of alpha iron. Dr. Mathews suggests that the most desirable magnet steels are those which retain the greatest amount of austenite, or gamma iron, and proceeds to check this assumption by marshaling arguments drawn from the volume changes, the x-ray patterns and high power metallography. For instance, some alloy steels were shown long ago to be magnetically harder when quenched in oil then when quenched in brine. According to Dr. Mathews' present theory that means that the oil-quenched steel contains more gamma iron than when quenched more drastically in brine. This is contrary to the general assumption of a hardener, and it has taken the intervening years for some one to rise up and ask: "Does a piece of steel contain more austenite simply because it has been cooled at a faster rate?" Once the question is asked and then investigated by modern methods, the answer seems to be "not necessarily."

So it is worthy of repeating, that undoubtedly Dr. Howe would have been highly pleased with the last memorial lecture. He doubtless would have said: "Let's test the assumption that physical hardness is due to atomic disorganization, and magnetic hardness is due to gamma iron, and see how the facts fit!"

CORRESPONDENCE

More Science in Steel Making

To the Editor: I have read with interest your editorial calling for more science in steel making. Without being at all familiar with modern boiler room operation, I can readily see that with fuel of known thermal properties, adjustable mechanical feed, etc., varying loads can be met by automatic apparatus to speed up the fuel supply, adjust dampers and drafts in the proper relation for effective combustion.

When you begin to contrast such scientific development with modern open-hearth operations, there appear a thousand and one difficulties—none of which may be unsurmountable—but which together present a formidable barrier to automatic pyrometer control of open-hearth furnaces. As you say, there has been practically no headway made in scientific control of open-hearth furnaces, and empiricism is still the order of the day.

To me, there does not seem to be any possibility of open-hearth operations being brought under even

pyrometric control, until there are more technical men with *furnace operating* experience in the business.

Follow the career of any young technical man who starts at the bottom to learn furnace operating, and as a rule you will not find him staying very long. He finds himself up against years of tradition and empericism, and generally takes his training elsewhere into lines where it will be of use to him, incidentally leaving behind him the impression that the hard work is the reason of his quitting.

The correct operation of an open-hearth furnace calls for many things besides the tapping of steel. Furnace upkeep, flame control, and temperature control under a slag of varying viscosity—to mention only a few items—can be learned by experience only. Unless a man has this experience in addition to his technical training, he is not going to be able to use that technical training for the advancement of furnace practice to the point where difficulties in the way of automatic control can be tackled. If some way is found to give technical men such training without asking them to sacrifice three to ten years of their time, I think progress will have been made in the direction you mention.

JOHN N. HOGG.

Youngstown, Ohio, Feb. 13

Has Not Reduced Cost to Consumer

Effects of Order in Pittsburgh Plus Case Discussed at Hearing in Bethlehem Merger Case—Old Base Steel Generally Used

PHILADELPHIA, Feb. 16.—Generally there has been no difference in cost of steel to his company since the order of the Federal Trade Commission abolishing the Pittsburgh base, according to testimony of President Joseph N. Dalsen of the American Fabricated Steel Co., fabricator and erector, with warehouse in Philadelphia, which, he said, purchased about 7000 tons of steel last year. Most of the purchases consist of shapes and have been and are made from Bethlehem and other companies in the Philadelphia district together with some from other sources. This testimony was given at the Bethlehem merger hearing in Philadelphia last week. Attorney Bane inquired whether the cost has been the same as if the prices had been quoted as before the commission's order, on an f.o.b. Pittsburgh price.

"I think the prices have been made up at the present time on the basis of Pittsburgh plus the Pittsburgh freight to Philadelphia, on the average," the witness declared. "There may be some mills where they want to slide under a little bit and maybe average a little less than the 32c. freight."

Mr. Dalsen said that both the Cambria Steel Co. and the Lackawanna Steel Co., properties acquired by Bethlehem, were "at times" in the Philadelphia market before the merger. Asked by Mr. Bane whether Lackawanna would cut prices to obtain business in the Philadelphia market, Mr. Dalsen said that in order to get business that concern had offered "inducements" to Morris, Wheeler & Co., Inc., and the Montgomery Iron & Steel Co. when he was associated with those organizations.

"From the buyer's standpoint, Mr. Dalsen, do you think you are better off with many mills offering to sell you the same product or with fewer mills?" inquired Mr. Bane.

"Many mills," the witness replied.

Upon cross-examination conducted by Attorney Robison, the witness explained that the "inducements" made to Morris, Wheeler & Co. and the Montgomery Iron & Steel Co. were limited to comparatively small lots when purchases were made. He said he thought the "inducements" involved two contracts with Morris, Wheeler & Co., and one with the Montgomery Iron & Steel Co.

Arne S. Solem, New York, representing the Link Belt Co., who had testified at the New York hearings, was recalled to the stand and submitted invoices showing purchases of various kinds of steel from the Bethlehem Steel Co. and the properties it acquired through the merger.

Effect of Eight-Hour Day

L. Norris Hall, president and treasurer of L. Norris Hall, Inc., steel jobber with warehouse in Philadelphia, in describing the market said that prices of steel began to fall until about March, 1924, and that he felt they would have fallen prior to that time except for higher costs of production brought about by the introduction of the 8-hr. day. He said that his company keeps a stock of from 400 to 500 tons of steel in its warehouse and purchases from 800 to 900 tons a year, mostly soft bars, small shapes and bands. He told of the sources of purchases, which covered a rather wide range of producers, including Bethlehem, and the properties it acquired. Replying to a question by Mr. Bane, the witness said that he believes steel jobbers have contracts for steel bars and small shapes at around 2c., base, Pittsburgh, for first quarter delivery, although, he added, current prices range from 2.10c. base, to 2.20c., base, Pittsburgh.

The Bethlehem Steel Corporation is seldom a competitor of the Robinson Iron & Steel Co., fabricator, Manayunk, a suburb of Philadelphia, according to President Roy A. Robinson of the latter company, which purchases about 3000 tons a year, mostly shapes. He declared that Bethlehem does not often seek the smaller jobs. Mr. Robinson said that he buys fabricated steel as well as plain material from Bethlehem.

Pig Iron Purchases

A. Coleman Smith, assistant secretary and treasurer Glasgow Iron Co., Pottstown, Pa., producer of skelp iron and socket iron and plates chiefly, said his company purchases approximately 20,000 to 25,000 tons of gray forge iron annually. He was the first witness who dwelt with pig iron purchases. He said that he had purchased no iron directly from Bethlehem or Midvale. The company, he stated, buys regularly from the Eastern Steel Co., lessee of the Warwick Iron Co., the Reading Iron Co., and the Thomas Iron Co. The witness also said that "we try to buy iron from the Woodward Iron Co., Woodward, Ala." No change has been made since the Bethlehem merger, the witness said, in the purchase of slabs for rolling plates, which are bought principally from the Alan Wood Iron & Steel Co. The witness said that today the price of plates is on a base that will not permit his company to convert steel slabs at the price that it has to pay "to come anywhere nearly breaking even." He said that price is 2.80c. f.o.b. mill, while he estimated the slab price at between $38 and $40, Pittsburgh.

"Have you not found that in recent years the margin between plates and slabs has been less than it was prior thereto?" inquired Attorney Bane.

"Yes, sir; it has practically vanished today," said Mr. Smith.

Mr. Bane inquired whether the price of slabs declined in 1924 to the extent that other prices declined.

"I may not be qualified to speak on that with any authority," the witness said. "You see, we have not had occasion to buy and the only thing that we have available in the absence of requests for prices is the trade paper; that is, THE IRON AGE, for instance."

Speaking of the sales policy of the Pottstown Iron Co., leased by the Glasgow Iron Co., Mr. Smith said there is a loss between the pig iron and skelp.

"We figure normally on a loss between pig and muck bar of anywhere between 3 to 5 per cent, depending on the character of the iron, and from muck bar into skelp iron or socket, depending on the character

of the run," said Mr. Smith. "It may run from 15 to 20 per cent." The loss is accounted for largely by cinter, the witness said.

Harold D. Johnson, purchasing agent for the Specialty Engineering Co., Philadelphia, manufacturer of elevating and conveying machines, said that his company purchases about 300 tons of sheared plates, shapes and bars each year and that purchases had been made prior to the merger from properties acquired by Bethlehem, except the Lackawanna Steel Co. Since the merger, purchases are made from Bethlehem, Philadelphia jobbers and other sources. He said Bethlehem does and always did quote on an f.o.b. Pittsburgh basis with freight allowed to Philadelphia. He said that Bethlehem last November quoted him plates at 1.97c., shapes at 2.22c., and bars at 2.32c., f.o.b. mill with freight allowed to Philadelphia.

The hearing adjourned on Wednesday on account of Lincoln's birthday and was not resumed until this morning.

HIGHER EXPORTS OF HARDWARE

Advance About 5 Per Cent—Safety Razor Blades Tripled—Other Cutlery Shipments Up

Exports of hardware from the United States in 1924 are reported by the Department of Commerce in great detail, with comparative figures for 1923. Some of the outstanding items, expressed both in quantity and dollars, are given below:

	1924		1923	
	Net Tons	Value	Net Tons	Value
Hardware, builders', etc.	16,584	$9,096,831	19,675	$9,773,000
Ball and roller bearings	1,109	1,445,687	1,645	1,897,916
Chains	6,774	2,308,374	6,555	2,444,673
Heating boilers and radiators	4,340	782,044	6,678	1,090,128
Tin and galvanized iron hollow-ware	2,898	768,800	2,502	723,427
Tin cans	3,467	790,818	3,378	706,395
Enameled household-ware	1,459	627,900	3,019	1,217,811
Reamers, cutters, drills, taps, dies, etc.	976	1,975,498	1,264	2,111,060
Lamps and lighting devices, except electric	3,996	3,267,024	4,031	3,260,583
Abrasives	19,606	5,678,107	20,245	5,355,518
Tools:	Dozens		Dozens	
Axes	125,443	1,569,024	98,002	1,174,897
Saws	.....	2,497,832	1,781,344	2,003,535
Files and rasps	2,050,963	2,531,163	2,030,695	2,644,975
Safety razor blades	7,477,223	4,837,305	2,804,145	1,382,018

Gisholt "Old Time" Employees at Banquet

The service records of "ye old timers" of the Gisholt Machine Co., which has been located in Madison, Wis., for 37 years, were celebrated at a banquet given by the company to all employees of 20 years or more service. Fifty-four men, from all departments of the plant, were invited. There were eight 30- to 33-year men, 19 with 25 to 29 years to their credit, and 27 with 20 to 24 years' service. The combined service of these men totals 1319 years.

Other employment records besides those recognized in the "old timers rally" are given by Carl A. Johnson, president, as follows: 39 men with records of 15 to 19 years inclusive; 35 with from 10 to 14 years' service; and 113 men with from five to nine years, inclusive. Service pins have been issued to all of these employees.

Sharon Steel Hoop Co. Pleased with Outlook for This Year

YOUNGSTOWN, Feb. 17.—In line with 1924 reports of other independent steel producers in this district, the annual statement of the Sharon Steel Hoop Co. indicates that operations were carried on less profitably in 1924 than in the preceding year. However, the company made progress last year in a financial way.

"In January of this year we had the largest production of finished and semi-finished materials of any month in the company's history and we are continuing to operate at full capacity," states President Ker.

"This year was entered with a full order book and the company will be able to realize a profit under full operations. It is reasonable to expect satisfactory operations and earnings."

Last year the company spent $487,398.70 for improvements and new equipment, but deducted $334,100.89 on account of obsolete and abandoned machinery. Installation of electric drives for cold rolls at the Haselton sheet mill plant and improved machinery for the Youngstown Pressed Steel Co., a subsidiary, were among the principal improvements made in 1924.

Last year the company produced 274,142 tons of steel materials, with a gross value of $18,452,028.67. Net earnings, after charges, taxes and depreciation, were $490,714, equivalent after preferred dividends to $1.47 per share on the outstanding $50 par value common stock. In 1923, the company reported net profits equal to $6.35 on common.

Mr. Ker states the first four months of 1924 were the largest in the history of the company for production and shipments, and earnings were satisfactory. "During all the rest of the year, however, our products were generally selling at less than production cost," he adds.

Large Export Order for Plates

The New York office of the Chicago Bridge & Iron Works states that the contract which it has taken for furnishing all of the steel tankage in connection with the construction of the 300-mile pipe line for the Andean National Corporation, Ltd., in Colombia, will call for about 4000 tons of steel plates. The contract includes furnishing the tankage for the terminal station at Cartagena on the Caribbean Sea, together with the pumping station storage at the intermediate terminals on the Magdalena River. The pipe line will reach the producing properties of the International Petroleum Co. and will have a capacity of 25,000 bbl. per day. This is the largest export contract of this kind which has been let in a long time.

SELLS PRESQUE ISLE SITE

Cleveland-Cliffs Iron Co. Will Not Build Plant at Toledo, but Other Interests May Do So in Time

The Cleveland-Cliffs Iron Co. has definitely abandoned any intention of building blast furnaces and a steel plant at Toledo, Ohio, and has sold the several hundred acre site it held in that city to the Van Sweringen railroad interests for use in developing their railroad yard facilities.

This tract is located at Presque Isle near the mouth of the Maumee River and was acquired by the Cleveland-Cliffs company a number of years ago with the view of eventually using it as a site for blast furnaces and a steel plant. During the war it was sold to the Government as a site for a nitrate plant, the construction of which had hardly started when the war ended. Later the Cleveland-Cliffs company took the property back. Since this company originally bought the site it has acquired an interest in two Ohio blast furnace and steel companies. This was evidently a factor in its decision to abandon the Toledo project.

The sale of the site has revived newspaper reports that a steel plant will be built on the property. These reports, to say the least, are premature. However, the site is regarded as an admirable one for a steel plant and it is believed that should someone want to build a plant on this property, the Van Sweringen interests, not unmindful of the freight traffic such a plant would bring to their railroad, would be willing to sell as much of the property as would be needed for the erection of a steel plant.

FABRICATED STEEL PLATE

First Report of Bookings of This Unit of Steel Industry

WASHINGTON, Feb. 17.—Issuing the first of a series of monthly reports for this unit of the industry, the Bureau of Census today announced that total bookings of fabricated steel plate for 1924 as 50 per cent of capacity, amounting to 433,402 tons. The statement is based on reports from 30 identical firms, one of which is now out of business. The 1924 total bookings compare with 775,388 tons taken by the same firms in 1923, representing 90 per cent of their capacity the latter year.

Of the 1924 bookings, 123,445 tons were for oil storage tanks, 11,272 tons for refinery materials and equipment, 12,973 tons for tank cars, 42,237 tons for gas holders, 9398 tons for blast furnaces and 234,077 for stacks and miscellaneous purposes. The 1923 bookings were divided as follows: Storage tanks, 297,788 tons; refinery materials and equipment, 16,765 tons; tank cars, 28,391 tons; gas holders, 43,876 tons; blast furnaces, 8243 tons; stacks and miscellaneous, 380,325 tons.

Total bookings in December, 1924, amounted to 45,396 tons, compared with 43,141 tons in December, 1923, and 36,937 tons in November, 1924. Bookings in December of last year were divided as follows: Oil storage tanks, 26,449 tons; refinery materials and equipment, 757 tons; tank cars, 1345 tons; gas holders, 5769 tons; blast furnaces, 2508 tons; stacks and miscellaneous, 8568 tons. Bookings in December were the highest since June of last year, when they amounted to 56,642 tons, while the highest total for 1924 was in May, when bookings were 80,665 tons, of which 66,729 tons were for stacks and miscellaneous.

January Bookings of Sheet Makers Show Marked Decline

The monthly report of the National Association of Sheet and Tin Plate Manufacturers for January makes the following comparison with that for the two previous months and for January last year, figures being in net tons:

	1925	1924		
	Jan.	Dec.	Nov.	Jan.
Number of mills	701	701	686	679
Capacity	428,600	422,600	384,000	427,000
Per cent reporting	75.6	74.4	73.5	73.5
Sales	241,040	350,868	462,709	234,858
Production	317,424	259,794	224,931	274,097
Shipments	283,645	229,573	219,228	228,660
Unfilled orders	607,190	663,460	531,845	471,053
Unshipped stocks	91,363	85,856	76,811	79,528
Unsold stocks	49,460	45,743	41,573	37,541

Inland Steel and Youngstown Sheet & Tube Companies May Be Merged

Recent negotiations between the Inland Steel Co. and the Youngstown Sheet & Tube Co. may lead to a merger of the two companies. The Chicago district steel plant of the latter company is located immediately adjacent to the works of the Inland Steel Co. at Indiana Harbor, Ind., and the union of the two properties under one management would be a logical consummation.

The Inland Steel Co., it will be recalled, negotiated for the acquisition of the former Steel & Tube Co. of America plant before it was finally taken over by the Youngstown Sheet & Tube Co. two years ago.

H. W. Grant, of Youngstown, receiver for the Struthers Furnace Co., announces that Hickman, Williams & Co. have been appointed exclusive agents to handle the company's stock of forge, foundry and basic pig iron, estimated at 75,000 tons. The receiver states that the stocks will be liquidated in an orderly manner, with due regard to market conditions.

DUMPING ALLEGED

Government Inquires as to Facts Relating to Pig Iron Importations

Action of the Federal Government, investigating alleged infraction of the anti-dumping act of the Sixty-seventh Congress, was on the complaint of Robert Lea & Co., Philadelphia, representing Robesonia furnace and the Alan Wood Iron & Steel Co. The inquiry at this time particularly concerns shipments from India and the Customs Division has cabled through the State Department to the American consul at Calcutta to ascertain whether or not iron from India is being sold in the United States at less than the market value in India, plus freight and other charges. Investigation also is being made by the Customs Division to learn whether or not American industry is being injured by these imports.

It is claimed that the furnace price on shipments of Indian iron has been between $11 and $12 a ton, or about $13 a ton, f.o.b. ship, Indian port. It is claimed that Indian iron was delivered at Galveston at $17 to $18 a ton, while other shipments into the Port of Philadelphia are said to have brought about $20 a ton, c.i.f., duty paid, but importers say recent rates have been at much higher prices. Shipments of pig iron have been made by three furnaces, the Tata Iron & Steel Co., Bengal Iron & Steel Co. and the Indian Iron & Steel Co. It is claimed that at the time the complaint was made that the anti-dumping act was being violated the prevailing price in the small market afforded to pig iron in India was about $18 a ton, furnace. Since then action of the Government of India in increasing the tariff on all imports has, it is asserted, resulted in a further advance of the domestic price with no corresponding change in the export quotation.

According to statistics of the Department of Commerce, imports of pig iron in December, 1924, totaled 28,143 tons, valued at $437,183, or an average of $15.50 a ton. The importers assert that the customs invoices do not include all charges. Of this total, 14,335 tons came from India; 9083 tons from England; 2411 tons from Holland; 1500 tons from Germany and 814 tons from Canada.

LUXEMBURG STEEL PRODUCTION

Year's Output Shows Gain of 57 Per Cent Over 1923—Pig Iron 53 Per Cent Up

LUXEMBURG, Jan. 26.—On Dec. 31 the number of furnaces active in the Grand Duchy was as follows: Arbed: All 6 at Esch; all 6 at Dudelange; 2 of the 3 at Dommeldange. Terres Rouges: All 6 at Belval; Esch closed down. Hadir: 8 of the 10 at Differdange; Rumelange closed down. Rodange: 4 of the 5. Steinfort: 2 of the 3. Total blowing, 34 out of 47.

Production in December included pig iron: 200,593 tons (against 185,216 tons in November), including 193,239 tons of basic iron (179,877 tons) and 7354 tons of foundry iron (5324 tons). Steel: 182,645 tons (157,798 tons in November), including 181,078 tons of basic steel (156,212 tons); 957 tons of open-hearth (1029) and 610 tons of electric steel (557).

Production in 1924

The production of the Grand Duchy during the past year totaled 2,173,216 tons of pig iron, against 1,406,666 tons in 1923; 1,685,700 tons in 1922 and 2,547,861 tons in 1913, when the Grand Duchy was still part of the "Zollverein," customs union with Germany; 1,886,289 tons of steel ingots, against 1,197,739 tons in 1923; 1,394,103 tons in 1922 and 1,182,227 tons in 1913.

The American Manganese Corporation, Pioneer Building, Seattle, has taken out a Washington charter with a capital of $50,000. The company states it has acquired six large deposits of high grade manganese ore located in the State of Washington which it proposes to develop.

FABRICATED STEEL BUSINESS

Ford Company Awards 12,000 Tons—Fresh Inquiries Amount to 29,000 Tons

Reports of awards of structural projects showed a total of 28,400 tons. Some 28,650 tons were added to the pending list. The past week ranks among the more favorable reported since Jan. 1 in point of new business, although the total tonnage of inquiries was less than the more than 35,000 tons of the previous week. Among the larger projects pending is the Lake Shore Athletic Club, Chicago, 7000 tons; a high school for Jamaica, N. Y., 4000 tons, and the Stevens Hotel, Chicago, previously mentioned, 17,000 tons, bids on which open March 2. The largest purchase of the week was 12,000 tons by the Ford Motor Co. for its open-hearth plant. Awards include:

Loft building, West Thirty-eighth Street, New York, 2500 tons, to Harris Structural Steel Co.

Loft building, West Thirty-ninth Street, New York, 1200 tons, to A. E. Norton, Inc.

City of New York, Pier No. 2, Hudson River, 900 tons, low bidder O'Day Construction Co.

Muskegon Machine Co., Newburgh, N. Y., 100 tons, to Fairmont Mining Machinery Co.

Elks' Club, Boston, 2400 tons, to New England Structural Co.

Mechanics Iron Foundry, Boston, 126 tons, to Boston Bridge Works.

Wurlitzer high school, Wurlitzer, N. Y., 150 tons, to R. S. McMannus Steel Corporation.

Allegheny County Court House alterations, 175 tons, to Jones & Laughlin Steel Corporation.

Logan Trust Co., New Kensington, Pa., 370 tons, to American Bridge Co.

Illinois Women's Athletic Club building, Chicago, 2300 tons, to Vanderkloot Steel Works.

C. F. Haglin & Sons Co., Minneapolis, plant for North Star Woolen Mills Co., Minneapolis, 606 tons, to American Bridge Co.

First Methodist Episcopal Church and Community building, South Bend, Ind., 160 tons, to American Bridge Co.

Missouri Portland Cement Co., St. Louis, extension to Prospect Hill plant, 134 tons, to Mississippi Valley Structural Steel Co.

Chester Williams Building, Los Angeles, 1200 tons, to Llewellyn Iron Works.

Casa del Mar Club, Santa Monica, Cal., 450 tons, to Brombacher Iron Works.

Bridge over San Diego River at Old Town, Cal., 310 tons, to McClintic-Marshall Co.

Hotel, Sutter Street between Hyde and Leavenworth Streets, San Francisco, 250 tons, to Golden Gate Iron Works.

Portland Gas & Coke Co., Portland, Ore., pipe line, 1100 tons, to Steel Tank & Pipe Co.

Pan-American Oil Co., 17 tanks at Oakland, Cal., 700 tons, to Steel Tank & Pipe Co., and 10 tanks at San Francisco, 400 tons, to Western Pipe & Steel Co.

Southern Pacific Railroad, 300 tons, to unnamed fabricator.

Lehigh & New England Railroad Co., bridges, 125 tons, to McClintic-Marshall Co.

Young's Million Dollar Pier, Atlantic City, N. J., 200 tons, reported awarded to New York Shipbuilding Co.

Rose Construction Co., Philadelphia, garage, 175 tons, to American Fabricated Steel Co.

Ford Motor Co., Detroit, open-hearth buildings, 12,000 tons, to Whitehead & Kales Co.

American Steel Foundries, waste heat boiler room, East St. Louis, Ill., 100 tons, to McClintic-Marshall Co.

Structural Projects Pending

Inquiries for fabricated steel work include the following:

Loft building, 242-246 West Thirtieth Street, New York, 1000 tons.

Bank, Third Avenue and 147th Street, New York, 200 tons.

Norfolk & Western Railway, bridge, 250 tons, bids in.

Ellaville, Fla., State highway bridge, 200 tons.

Florida East Coast Railroad, two drawbridges, 400 tons.

New Rochelle, N. Y., high school, 400 tons.

Baltimore, police headquarters, 1700 tons.

W. & J. Sloane, New York, linoleum plant in Trenton, N. J., 3000 tons.

City of New York, high school in Jamaica, 4000 tons.

City of Buffalo high school, 1450 tons.

Boston & Albany Railroad, passenger station and bridge repairs at Springfield, Mass., 2300 tons, reported as of 1100 tons last week.

Bird & Sons, Norwood, Mass., plant extension, 100 tons.

Lazarus Brothers' department store, Columbus, Ohio, 1400 tons, bids being taken.

City of Cleveland, fire department headquarters, 100 tons.

Masonic Temple, Ashtabula, Ohio, 125 tons.

Allen Memorial Medical Library, Western Reserve University, Cleveland, 100 tons.

U. S. Engineers, Pittsburgh, three barges, 225 tons, American Bridge Co. low bidder.

Stevens Hotel, Chicago, 17,000 tons, bids to be taken March 2.

Lake Shore Athletic Club, Chicago, 7000 tons, general contract awarded to Hegeman-Harris Co.

Seaman Body Co., Milwaukee, 1000 tons.

Sterling Building, Houston, Tex., 2500 tons.

Rice Hotel, Dallas, Tex., 1200 tons.

Plattesmouth, Neb., bridge, 500 tons.

Racine, Wis., Mead Street girder span, 100 tons.

Manitowoc, Wis., Eighth Street bascule bridge, 500 tons; bids close March 2.

RAILROAD EQUIPMENT BUYING

Slight Decline in Car Inquiries—Purchasing Light —More Inquiry for Locomotives

New inquiries for cars totaled 694 this week, slightly less than the number of new inquiries that appeared the previous week. Orders registered a decline to 515 compared with 4725 last week. The largest single order of the week was 400 ballast cars purchased by the Southern Pacific. Locomotive inquiries totaled 35, compared with none reported in the previous week. A total of 11 were purchased.

The Waite Phillips Co., Tulsa, Okla., has placed 50 8050-gal. tank cars with the Standard Tank Car Co.

The Craig Oil Co., Toledo, Ohio, has awarded 15 6050-gal. tank cars with the Standard Tank Car Co.

The Southern Pacific Co. has ordered 400 Hart ballast cars from the Rodger Ballast Car Co.

The Indiana Harbor Belt Line is in the market for five 8-wheel switching locomotives.

The Chicago Short Line has closed on a switching locomotive with the Baldwin Locomotive Works.

The Union of South Africa is inquiring for 27 gondola cars and 42 cars of other types.

The Sloss-Sheffield Steel & Iron Co. is in the market for 75 55-ton hopper cars and 25 55-ton gondola cars.

The Boston & Maine is asking for prices on materials for building 500 box cars, which may be built in the company shops.

The Andes Copper Mining Co. is in the market for 15 flat and 10 gondola cars.

The St. Louis-San Francisco is in the market for 10 baggage cars.

The Soo Line is asking for 10 milk cars.

The Nashville, Chattanooga & St. Louis is in the market for 2 dining cars and 2 baggage cars.

The Northern Pacific has placed a gasoline-driven motor car and trailer with the Oneida Mfg. Co.

The Inland Steel Co. has ordered 50 70-ton air dump cars from the Western Wheeled Scraper Co.

The Rock Island Lines have placed 10 8-wheel switching locomotives with the American Locomotive Co. and are inquiring for 10 freight locomotives of the 2-10-2 type.

The Minneapolis & St. Louis contemplates purchasing 20 locomotives.

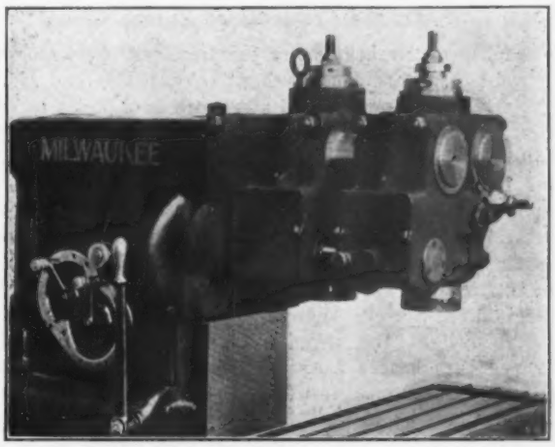
The Seaboard Air Line has placed repairs on 274 box cars with the American Car & Foundry Co. and repairs on 726 box cars with the Richmond Car Works.

Steam locomotives shipped from manufacturing plants in January are reported by the Department of Commerce at 90, of which 45 were for export. The total is the lowest since last April and, with that one exception, the lowest in considerably more than two years. The export figure, however, is the highest in more than two years, being nearly one-third of the total number of 145 shipped for export in the entire 12 months of 1924. Unfilled orders at the end of January were 407, of which 56 were for export.

Two-Spindle Vertical Head for Milwaukee Millers

A new attachment in the form of a two-spindle vertical head for use with the Milwaukee Milling Machines of the Kearney & Trecker Corporation, Milwaukee, has been placed on the market.

The arrangement of the attachment, which may be used for a variety of work requiring two spindles, may be noted from the accompanying illustration. The spindle nearest the column is fixed in its relation to the column and is supported by a rigid housing clamped both to the face of the column and to the double over-arms which pass through it. The spindles are located centrally between the double over-arms, which, it is claimed, provide a maximum work range in either direction, as well as unusual rigidity. The housing for the outer spindle, or the one farthest from the column, is adjustable in and out toward the column, the over-arms serving as a slide for this purpose. Accuracy of alinement is a feature. A screw and micrometer dial are provided for this adjustment.



Milling Machine Attachment for Use on a Variety of Work Requiring Two Spindles. The inner spindle is fixed and the outer spindle is adjustable in-and-out

The outer spindle is furnished with a reversing mechanism which, in combination with the reverse in the machine, permits of operating the spindles in the same or in opposite directions. The outer spindle also has a vertical adjustment to permit of relative difference in level between the cutters carried by the two spindles.

When using face mills of large diameter with a spindle exactly vertical to the travel of the table, the back edge of the cutter frequently drags and marks the surface of the work. To prevent this an eccentric bushing has been incorporated in the housings, through which one of the over-arms passes. This bushing may be moved to tilt the spindle slightly from the vertical in either direction, which is intended to avoid dragging of the cutters.

Continuous Rolling in Great Britain

In a recent address before the South Staffordshire Iron and Steel Institute, D. L. Whitehead informed his audience that continuous rolling was a British invention. Great Britain, however, according to Mr. Whitehead, offers little scope for the 10-stand billet and sheet bar mill. There is, however, room for the six-stand mill, as it can be adapted, in conjunction with a blooming mill, for producing sheet bars, within certain limits.

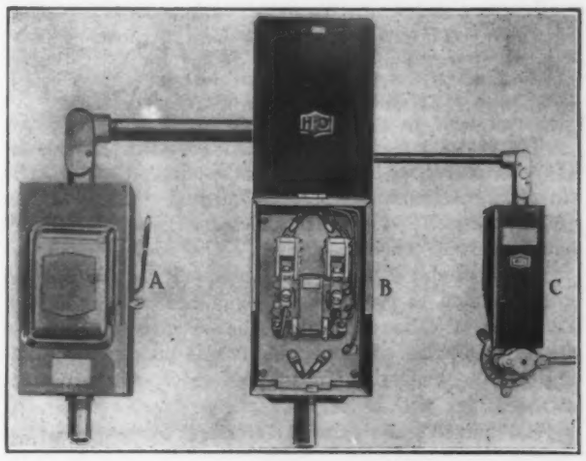
Regarding rods, he pointed out that the mill of the Templeborough Rolling Mills, Ltd., at Sheffield, with its capacity of 100,000 tons a year, can handle 40 per cent of British requirements. Besides this one, there are four other modern continuous or semi-continuous rod mills in Great Britain, according to *Engineer* (London). The speaker stated that a marked increase in domestic demand would be necessary, together with cessation of importation of rods, before any increase in mill equipment would be justified. He pointed out, also, that the capital charges on a continuous mill are so high that its advantages over the older type of mill are dissipated if the output falls below 60 to 70 per cent of full capacity.

Building Steel Fabricating Plant

BIRMINGHAM, ALA., Feb. 16.—Issuance of building permits for five structures, to cost $300,000, is indication that work on the steel fabricating plant of Reeves Brothers Co., Alliance, Ohio, is making progress in Birmingham and the president of the company, A. G. Reeves, expresses the opinion that the plant will be completed and in operation by May of this year. The industry will manufacture gasoline and oil tanks and tank cars and will use a considerable quantity of steel. It represents an outlay of $1,000,000. Machinery has been ordered and some of it is being received now.

Tank Pressure Controlled Automatically

A wiring and installation arrangement for the automatic control of a small alternating current single-phase motor-driven pump outfit is illustrated herewith. The main line switch, *A*, is of the inclosed outside-operated type mounted beside a double-pole magnetic switch, *B*, and pressure-actuated switch, *C*, all of Cutler-Hammer Mfg. Co., Milwaukee, design. The pressure-actuated switch is connected by pipe to the tank and electrically to the magnetic coil of the magnet switch so that when the pressure in the tank drops to a predetermined low point the magnetic switch is caused to close, thus automatically connecting the motor on the line. When the pressure reached the desired high point, the pressure switch opens, the magnetic switches drop out, and the motor and pump come to rest.



Wiring and Installation Arrangement for Automatic Control of Small Single Phase Motor-Driven Pump

Plans for a structural steel fabricating plant at Central Avenue and 110th Street, Los Angeles, Cal., are being prepared for McClintic-Marshall Co., by Orville Clark, architect, 1418 Chapman Building, Los Angeles. The group of buildings will include steel frame and corrugated iron crane runway, with asphaltum paved floor, steel frame, corrugated iron and brick auxiliary building to house machinery, riveting and plate shops, and a two-story brick office building. The plant will be built under the supervision of W. B. Kyle, vice-president, McClintic-Marshall Co., 426 South Spring Street, Los Angeles.

The city of Seattle has made a reduction of from 7 to 15 per cent in rates charged for electric power for commercial purposes, but there will be no reduction in domestic rates.

European Continental Markets Improving

Works Have Orders for Several Weeks—Situation in England Bad—United States Buying Steadily—France Wants Franc Stabilization

(*By Cablegram*)

LONDON, ENGLAND, Feb. 16.

PIG iron is steady, without any appreciable improvement in business. Export inquiries are coming in, while domestic consumers are purchasing, but no large lines are involved. America is inquiring for Cleveland foundry irons but no sales have developed yet. Hematite is quiet, on the dullness of steel generally. American inquiries for East Coast mixed numbers have been received, but no business is reported yet.

Foreign ore is dull here. Bilbao Rubio is held nominally at 22s. ($5.25) c.i.f. Tees. Germany has placed a 5-year contract with Swedish ore producers and is reported to be negotiating, also, a long-time contract for Wabana ore.

Steel is dull, owing to the slackness of new shipbuilding, but Japan is inquiring for about 5000 tons of bridge-making material. The works are in need of orders, but are not shading prices except on very favorable specifications for early shipment.

January pig iron exports amounted to 44,548 tons, of which 4447 tons went to the United States. Total exports of iron and steel were 325,351 tons.

Sheets and Tin Plate

Tin plate bars have been reduced 3s. 6d. to £8 4s. ($39.18) delivered, less the usual rebate of 7s. 6d. The tin plate minimum has been reduced 6d. (basis) to 23s. ($5.49) basis, IC, f.o.b. Bristol Channel ports. Demand has improved considerably since the reduction in the price, particularly from the Continent, but so far no great volume of orders has been placed. The Asiatic Petroleum Co. bought 500,000 boxes just prior to the decrease in price. The merchants and makers are holding [another] meeting Tuesday at which, it is expected, all questions will be settled.

Galvanized sheet sales are confined to small parcels, no big demand developing. Makers are fairly well off and not inclined to reduce prices.

Black sheets are dull.

On the Continent of Europe

Continental markets are erratic, some works being in want of orders for merchant bars, plates and joists [beams], but semi-finished steel still is difficult to obtain. Sheet bars are being sold at £5 10s. ($26.29) f.o.b. for April delivery. Canada is inquiring for rods and New Zealand for river [?] bars.

In Luxemburg the Société des Hauts-Fourneaux et Acieries de Differdange has blown in the ninth furnace [out of ten] at Differdange. In German Upper Silesia eight furnaces are blowing, out of a total of 15. In Belgium the Société Anonyme John Cockerill is preparing to relight the seventh furnace this month. In France the Société Lorraine des Acieries de Rombas has blown out one unit for repairs. In Austria the Oesterreichische Alpine Montangesellschaft is planning to blow in a third furnace in February.

British Finished Steel Market Dull and Export Trade Bad

LONDON, ENGLAND, Feb. 5.—The long-looked-for revival in iron and steel seems as far off as ever. The main trouble, of course, is the entire absence of any substantial demand for our products for export, and until there is a considerable improvement in this direction better times cannot be expected. At the moment the buying of pig iron is confined to home consumers, and then only to the covering of bare necessities, the outlook for the immediate future being so uncertain that they are forced to refrain from forward commitments on any important scale.

Successive cuts in prices, made by ironmasters to attract attention, generally speaking have been without avail, and demand is barely sufficient to absorb the

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British and Continental prices per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalent figured at $4.78 per £1, as follows:

Durham coke del'd	£1	4s.				$5.73		
Bilbao Rubio ore†	1	4				5.73		
Cleveland No. 1 fdy.	4	4				20.07		
Cleveland No. 3 fdy.	3	19				18.86		
Cleveland No. 4 fdy.	3	18				18.62		
Cleveland No. 4 forge	3	17				18.39		
Cleveland basic	4	0				19.10		
East Coast mixed	4	6	to £4	6½s.		20.55	to	$20.67
East Coast hematite	4	19	to 5	0		23.66	to	23.90
Ferromanganese	15	0	to 15	10		71.70	to	74.09
*Ferromanganese	15	0	to 15	10		71.70	to	74.09
Rails, 60 lb. and up	8	10	to 9	0		40.63	to	43.02
Billets	7	0	to 8	0		33.46	to	38.24
Sheet and tin plate bars, Welsh	8	4				39.18		
Tin plates, base box	1	3				5.49		
						C. per Lb.		
Ship plates	9	0	to 9	10		1.92	to	2.02
Boiler plates	13	0	to 13	10		2.77	to	2.88
Tees	8	17½	to 9	7½		1.89	to	2.00
Channels	8	2½	to 8	12½		1.73	to	1.83
Beams	7	17½	to 8	7½		1.68	to	1.79
Round bars, ¾ to 3 in.	9	2½	to 9	12½		1.94	to	2.05
Galv. sheets, 24 gage	17	0	to 17	5		3.62	to	3.68
Black sheets, 24 gage	12	0	to 12	5		2.56	to	2.61
Black sheets, Japanese specifications	15	5				3.25		
Steel hoops	10	15	and 12	10*		2.29	and	2.66*
Cold rolled steel strip, 20 gage	16	0				3.41		

*Export price.
†Ex-ship, Tees, nominal.

Continental Prices, All F. O. B. Channel Ports

Foundry pig iron: (a)								
Belgium	£3	15s.				$17.92		
France	3	15				17.92		
Luxemburg	3	15				17.92		
Basic pig iron: (a)								
Belgium	3	14				17.68		
France	3	14				17.68		
Luxemburg	3	14				17.68		
Billets: (a)								
Belgium	5	7½	to £5	10s.		25.69	to	$26.29
France	5	7½	to 5	10		25.69	to	26.29
Merchant bars:						C. per Lb.		
Belgium	5	17½				1.25		
Luxemburg	5	17½				1.25		
France	5	17½				1.25		
Joists (beams):								
Belgium	5	12½				1.20		
Luxemburg	5	12½				1.20		
France	5	12½				1.20		
Angles:								
Belgium	6	0	to 6	2½		1.28	to	1.30
⅛-in. plates:								
Belgium	7	0				1.49		
Germany	7	0				1.49		
⅜-in. ship plates:								
Luxemburg	7	0				1.49		
Belgium	7	0				1.49		

(a) Nominal.

current output. All over the Continent foreign iron is able to compete successfully with British material, but with Continental costs advancing, and British iron becoming cheaper, the margin between the two is being reduced in gradual stages.

At the end of last year there were 167 furnaces in blast, of which 41 were on the Northeast Coast and 32 in Scotland. At present 40 furnaces are blowing on the Northeast Coast, while four have been damped down in the Scottish area.

In semi-finished steel the Continental product is still by far the cheapest article, but increasing difficulty is being experienced in obtaining supplies from that source, owing to the works being heavily sold. Trade in British semi-finished material, therefore, is on a very limited scale.

Finished iron and steel are still very dull, except in light gages such as sheets, where a brisk trade was done recently in galvanized sheets, but rollers of plates and sectional material generally are none too happy. Not many new orders for ships have been forthcoming recently, so that the call from the shipyards has not been large. Structural steel producers, however, are fairly busy in some quarters, there being an enormous amount of building and rebuilding being done in the country, particularly in the London area, and these contracts will keep suppliers busy for some time, while the railroad contracts placed during the last few months will keep other plants busy.

Export business, however, is very bad and the trouble now is that there is not enough work to go around, and so a cut-throat policy is being engendered in connection with prices for shipment. Business in tin plate has been dull, the position having been considerably jeopardized by the dissension between some of the makers and the merchants, but there is every hope, and indeed indications point to a realization of this hope, that when these differences have been settled, Wales will settle down to a good steady trade.

It is reported that the Rotterdam Dry Dock Co., in conjunction with the Royal Dutch Shell group, has taken over the shipyard Nieuwe Waterweg, near Schiedam, Holland, the latter being a subsidiary of the Furness-Stokvis concern.

FRENCH CURRENCY PROBLEMS

Iron and Steel Market Depends on Stabilization at Present Exchange Level

PARIS, FRANCE, Feb. 6.—"No further inflation" seems to be the motto of the government. If the stabilization of our currency at present rates of exchange may be thought desirable, its sudden recovery to higher rates would bring a complete disorganization of trade. It is the stabilization of our franc at about its present level, giving us the possibility of doing business in the outside markets, that will insure the maintenance of the present conditions in our market and thus avoid a crisis which undoubtedly would take place if the national and international agreements were not reached.

At some informal meetings held recently in Paris the metallurgists discussed the question of agreements and prices. The reconstitution of the "selling comptoirs" was admitted in principle, but many a conversation may likely follow before the plan is fully carried out. As regards the prices, it has been decided that the producers would allow for the increase of costs resulting on the advance in transport tariffs and, in some instances, for the readjustment of salaries; pig iron already has been raised through this fact, and the increase in steel prices will not be less than 20 fr. per ton.

Coke.—During January the coke delivered to the ORCA totaled 320,771 tons (daily average 10,400 tons, about). The rise of 15 fr. in the price of indemnity coke, which ought to have taken place on Feb. 1, is now entirely out of the question, as the wage increases claimed by the Ruhr workers have not been granted. The price of reparation coke will be advanced only 1.15 fr. per ton, to reestablish the parity between the value of this fuel, delivered to the Thionville region, and that of the French metallurgical coke, delivered same region, raised now through the increase in transport charges.

On the French side efforts are multiplied to increase the production of coke; in the Nord and Pas-de-Calais, the Mines d'Anzin are to operate shortly a new battery of ovens of a total capacity of 100,000 tons per annum; Dourges is soon to have 50 new ovens on blast; Vicoigne-Noeux will complete, during the current half-year, a battery of 25 ovens, the capacity of which will reach 120,000 tons a year.

Pig Iron.—The output is larger and the exportation has very nearly reached the level of February last, the peak month in 1924. The market is quiet and some producers have their disposals entirely sold out. The ruling quotations are, on truck East, 315 fr. ($17.22 per gross ton) for No. 3 PL; 345 to 355 fr. ($18.85 to $19.40) for semi-phosphoric; 340 to 345 fr. ($18.58 to $18.85), f.o.b. Antwerp, for export. The Belgian inland prices are: 350 Belgian fr. ($18.30) at producing works; 370 fr. ($19.35) delivered, for both Belgian and Luxemburg grades. There are few transactions in basic iron. Hematite is more resistant; prices, on the average of 420 to 430 fr. ($22.95 to $23.50), on truck East, about the same in the Center, are quite variable. Some producers, well booked ahead, are little inclined to concessions.

Ferroalloys.—The output is reduced through lack of water in the plants. British and French grades of ferromanganese sell currently at 1,500 fr. per ton ($82), delivered; ferrosilicon, 10 to 12 per cent, is offered at 600 to 620 fr. per ton ($32.80 to $33.90), free, according to tonnage. Some activity is noticeable in spiegeleisen at 520 to 530 fr. ($28.42 to $28.97) for the 10 to 12 per cent Mn.; 650 to 660 fr. ($35.53 to $36.07) for the 18 to 20 per cent, on truck, East.

Semi-Finished Steels.—The inland market is quiet, but prices are firm and unaltered, on the following basis: Ingots, 40 to 41 fr. ($21.86 to $22.41); blooms, 42 to 43 fr. ($22.95 to $23.50); billets, 44 to 45 fr. ($24.05 to $24.60); largets, 46 to 47 fr. ($25.14 to $25.69) per 100 kg., East works, prices running 2 or 3 fr. higher in the North. Due to lack of supplies in Belgium, the export rates are sustained in spite of the unimportant volume of business: blooms are offered at £5 2s. 6d. ($24.50); billets, £5 5s. ($25.10); largets, £5 7s. 6d. ($25.70), f.o.b. Antwerp.

Rolled Steels.—Beams are generally quieter, prices more discussed and variable, according to origin; the average quotation is 48 to 49 fr. per 100 kg. (1.17c. to 1.20c. per lb., East works) 47 fr. (1.15c.) for large samples. Most of the trade passing in merchant steels is repeat orders; delivery times are three weeks to one month. The average quotation is 51 fr. (1.24c.); however, 50 fr. (1.22c.) can be obtained for angles; the basis quotation might soon be 52 fr. (1.27c.).

In Belgium the rise of the franc has disorganized the market and made transactions scarcer; fortunately, there is a fair amount of unfilled orders which help to keep prices steady. Belgian and Lorraine quotations are at par, Luxemburg prices are slightly higher. The exports of rails in December were quite good and values have reached the level of rolled steels. Tenders for an order of 1000 tons of Vignole 55-kg. standard steel rails involved the price of 510 to 514 fr. ($27.88 to $28.10), on truck, Meurthe-et-Moselle.

Sheets.—Rather fair activity in heavy sheets, the shortest time for deliveries is two weeks. The average quotation ranges between 66 and 67 fr. (1.61c. and 1.63c.), possibly 65 and even 64 fr. (1.59c. and 1.56c.); boiler sheets in the Sarre district are offered at 70.50 to 71 fr. (1.72c. to 1.73c.); medium sheets are unaltered at 83.85 fr. (2.05c.), producing works; quotations for light sheets are 100 to 105 fr. (2.44c. to 2.56c.), delivery three to five weeks. On the export market, heavy sheets are worth £7 2s. 6d. to £7 8s. 6d. (1.52c. to 1.58c.).

Wire Rods.—A good tendency has developed while keen competition is noted. Active trading for export.

Foundry.—Pattern-foundry and cast steels are

rather active, prices about steady and more remunerative than last year for the latter. Bronze foundry and the entire department suffers from general competition.

GERMANS WANT HIGHER DUTIES

Iron Industry Demands High Import Taxes and an Export Bonus—Farm Credits to Buy Agricultural Machinery

BERLIN, GERMANY, Jan. 31.—The agreement between representatives of the German iron producers and the consumers, drawn up during December and kept secret up to now, is largely commented on in the press. Its main point, high import taxes on iron, is considered detrimental to the German home market in general, as the exclusion of foreign competition from the inland iron market will lead to increase of prices all around.

According to the agreement, the demand of the German iron producers for high import taxes is supported by the consumers, who are to be compensated for a rise in raw material prices at home, which might make it difficult for them to compete abroad, from a fund the producers are establishing. The export bonus, which the manufacturers of finished goods would receive, is to amount to about the difference between the higher home prices and the prices prevailing abroad. The iron producers have also undertaken to support the manufacturers of finished goods in their endeavors to get the minimum French import tax to apply to their products.

It is stipulated also that the agreement for the contingents of French raw material to be imported by the German Steel Syndicate is not to be made part of the trade agreement between the two countries, but is to be regulated by a private understanding between the groups of French and German manufacturers interested. If the agreement with the consumers should come into operation, the German iron producers would gain a monopoly in the home market. Prices for semi-finished and for finished goods would depend entirely on the price policy of the iron masters and could be raised as far as the home market would stand it, a condition which undoubtedly will meet with the strong opposition of the other industries. The higher home prices for finished iron products, in consequence of the increase in raw material prices, will lead to a large reduction in home demand, and to an increase in prices in other industries.

Disturbances Apprehended

This will affect especially the engineering industry and may largely disturb the improvement which has taken place in the German industries during the last few months. Probably the question of high import taxes for agricultural products, which has been raised several times, may become acute also if high import taxes for iron are introduced, and the whole development will probably be accompanied by extensive social struggles. A considerable opposition against the agreement may therefore be expected from several sides.

In the South German market customers are still hopeful of a weakening of iron prices. They think that even if the Franco-German negotiations should not lead to an agreement and import taxes be introduced for iron goods, prices would still retain a reasonable level, as Alsace-Lorraine producers probably will lower prices sufficiently to compete successfully against Rhenish-Westphalian manufacturers. Considerable uncertainty, however, prevails in the market, but traders look forward to an improved spring business. South German stock prices are depressed and material is sold by the wholesalers at about the Rhenish-Westphalian works prices plus freight. Endeavors among the wholesalers in the district to come to an understanding about prices have proved abortive, mainly owing to the fact that large consignments of cheap Alsace-Lorraine material were sent into Germany prior to Jan. 10, when the free import privilege ceased.

Central European Tube Syndicate

In connection with the formation of a syndicate among the German manufacturers of tubes, negotiations have been conducted to form a syndicate, including the Czecho-Slovakian manufacturers in this line. This has been found necessary, as the German Mannesmann tube works at Düsseldorf belongs to the German Tube Syndicate, while the Czecho-Slovakian factory of the same firm at Komotau would be free to sell its products in the open market. An agreement with the two firms in Czecho-Slovakia, the Mannesmann works and the Witkowitz Iron Works, is therefore aimed at. Endeavors are being made also to induce the Polish tube works to join the syndicate. Negotiations have lately been conducted to form a syndicate in the Polish iron industry.

Being stimulated by the formation of the syndicate, the trade in tubes is brisk. The foundries are well employed and demand for pig iron is strong. Scrap prices are stiff, but seem to have reached the highest limit, while demand is still brisk. Most of the iron works are fully booked for the next two months, some fine sheet mills even for four to five months. Owing to the large improvement in the home market, foreign demand has become of secondary importance at present. Especially Belgian and French competition is very strong, and prices abroad are mostly below German quotations. Average German home quotations are at present, in gold marks per metric ton, with American equivalents:

	Per Gross Ton
Blooms	120 or $29.04
Billets	127 or 30.73
Sheet bars	132 or 31.94
Wire rods	152 or 36.78
	Per Lb.
Bar iron	138 or 1.49c.
Structural shapes	134 or 1.45c.
Universal iron	150 or 1.62c.
Hoop iron	174 or 1.88c.
Sheets, heavy	152 or 1.64c.
Sheets, medium	182 or 1.97c.
Plates, 1 to 3 mm. (No. 19½ to No. 11½ gage)	220 or 2.39c.
Plates, below 1 mm	235 or 2.54c.
Wire, drawn bright	186 or 2.01c.
Wire, drawn galvanized	230 or 2.49c.

The boom in the iron trade has strongly influenced the demand for pig iron and semi-finished material, but the German Pig Iron Association and the producers of semi-finished material have decided not to alter prices at present. In the German Upper Silesian iron industry, demand for pig iron has largely increased and the Donnersmarkhütte has rekindled another blast furnace, so that altogether eight furnaces are worked in the district. Business in structural shapes, building material and agricultural machinery has improved.

The German tool industry is working mainly for the inland market, while export business is small. Engineering firms generally are well employed. In typewriters German firms find it impossible to compete against American makes abroad. Negotiations between the German ministry of agriculture and the farmers have led to the decision to give a Government subsidy in the form of a 10,000,000-mark credit to supply agricultural machinery to the farmers. The buyer has to pay 10 per cent with his order, 15 per cent on delivery, 37½ per cent next October and the remainder next January.

Imports Greatly Exceed Exports

German foreign trade largely increased during December, imports by about 204,000,000 marks to 955,267,000 marks, and exports by nearly 68,000,000 marks to 570,904,000 marks. The increase in imports is due mainly to the greater imports from Alsace-Lorraine and Luxemburg in view of the cessation of the import privilege on Jan. 10. The importation of raw material and semi-finished goods increased by 140,500,000 marks, and of finished goods by 82,300,000 marks. The increase in exports is due especially to rolled iron material, machinery, colors and dyes, foodstuffs and coal. During 1924 the value of imports totaled 6,963,932,000 marks ($1,658,416,000) and exports 5,153,484,000 marks ($1,226,529,000).

LUXEMBURG MARKET DULL

Export Trade All That Keeps Plants Running at High Capacity

LUXEMBURG, Jan. 26.—The usually dull period of the year end, together with the uneasiness which has dominated the trade for weeks, have marked the iron and steel industry with uncertainty and irregularity throughout December. The reserve of the buyers has held down prices of most products; weakness prevailed during the whole month and, with certain exceptions, business has been much reduced.

This state of things did not arouse much anxiety, however, as December is never an active month for new buying, but is characterized rather by good activity in deliveries. For the moment, the current of export trade is sufficient to keep the plants running at high capacity, the only process which permits the maintenance of costs in harmony with selling prices, now relatively low.

The rise of the Belgian franc has brought a slight reduction in the price of pig iron at 350 to 360 fr. ($18.52 to $19.05) for foundry iron, 2.5 to 3 per cent Si. Business is active in semi-finished products. Inland quotations in Belgian francs are: blooms, 480 to 490 fr. ($25.40 to $25.93); billets, 500 to 560 fr. ($26.46 to $29.63); for export: £5 2s. 6d. ($24.90) for blooms, £5 6s. ($25.75) for billets. The rolling mills have now a fair supply of orders on hand and prices are well sustained at £5 12s. 6d. (1.22c. per lb.) for joists; £6 (1.30c.) for bars.

Our mining industry is now passing through an unprecedented crisis. Luxemburg ore, both calcarous and silicious, is suffering, owing to its low yield of iron, from the keen competition of Briey ore. The quantities of foreign ores consumed in our furnaces are increasing, in spite of the low prices of domestic minettes and of their transport facilities.

UNITED STATES BUYING ABROAD

Belgian Market Helped by Steady Purchases From This Side

BRUSSELS, BELGIUM, Feb. 6.—The market remains nominally firm, as most of the plants are heavily booked up to the end of April, but, apart from the United States, whose orders are received regularly, fresh buying is small. The reason for this subsidence in trade must be found partly in the rise of the Belgian franc, and also in the reserve shown by the users, who believe that their attitude will help lower prices.

As regards foreign competition, the Luxemburg plants quote higher prices, although slightly under those of last week, as they have now on hand important contracts from Germany; per contra, the Lorraine works' quotations are nearer to ours, sometimes even lower.

Pig Iron.—A weaker tendency has developed, but the producing works have large commitments to fill in; trading for export is satisfactory. Prices are easier at 350 to 360 fr. ($18.31 to $18.83) for No. 3. The Luxemburg and Lorraine plants are asking identical prices. Basic pig iron is discussed, but rather sustained at 335 to 345 fr. ($17.53 to $18.05) per ton, due to the very short supplies and high price of coke.

Semi-Finished Products.—The market is practically at a standstill, due to the fluctuations of exchange on the one hand and to the very low offers from the British plants on the other; the average quotations are 480 to 490 fr. ($25.11 to $25.64) for blooms; 500 to 510 fr. ($26.16 to $26.68) for billets; 520 to 530 fr. ($27.20 to $27.73) for largets for the inland market; for export, f.o.b. Antwerp, blooms, £5 2s. 6d ($24.50); billets, £5 4s. ($24.86); largets, £5 7s. 6d. ($25.69).

Iron.—The drop in exchanges and the high prices paid for scrap render business increasingly difficult in this department. The order books are getting empty; the average prices are: Inland, No. 3, 600 fr. ($31.40); export, No. 3, £6 7s. 6d. ($30.47), f.o.b. Antwerp.

Steel.—The volume of trade is very small and only for spot delivery. On the export market, there is good business with North and South America, while India and the Far East are quiet. Prices have eased further. Beams are neglected at 520 to 530 fr. (1.21c. to 1.24c. per lb.), and £5 10s. to £5 12s. (1.17c. to 1.19c.) for export. Merchant steels sell at 540 to 550 fr. (1.26c. to 1.28c.), inland; £5 17s. 6d. to £5 18s. 6d. (1.25c. to 1.27c.) for export. There is good inquiry for rods and hoops, with steady prices. The Luxemburg plants, busy with orders from Germany and North America, are asking higher prices than ours; the Lorraine works are more active and quote on the same level as ours.

Wire rod meets with a good demand at 675 to 700 fr. ($35.32 to $36.62); £7 2s. 6d. to £7 5s. ($34.05 to $34.65) for export.

Sheets.—Much resistance is shown in this department; it is slightly affected by the general quietness of trade, but there are a large number of orders in the plants. Heavy sheets are firm, inland quotations ranging as follows: 5 mm. (No. 6½ gage) and over, 690 to 700 fr. (1.61c. to 1.63c.); 3 mm. (No. 11½ gage), 750 to 760 fr. (1.75c. to 1.78c.); 2 mm. (No. 14 gage), 850 to 875 fr. (1.98c. to 2.04c.); 1.5 mm. (No. 16½ gage), 975 to 1000 fr. (2.28c. to 2.34c.); 1 mm. (No. 19½ gage), 1,125 to 1,150 fr. (2.63c. to 2.69c.); 0.5 mm. (No. 25½ gage), 1,225 to 1,250 fr. (2.86c. to 2.92c.). For export: £7 2s. 6d. (1.52c.) for heavy sheets, f.o.b. Antwerp.

Scrap.—Following a recent adjudication of the Belgian State Railroads, prices for old materials have strengthened: heavy steel, 340 fr. ($17.80); open-hearth, 320 fr. ($16.74); blast furnace, 290 fr. ($15.17); shavings, 225 fr. ($11.77); machinery cast, 375 fr. ($19.62).

OUT OF THE SLOUGH

Chinese Iron and Steel Market Shows Signs of Improvement After Bad Year

SHANGHAI, CHINA, Jan. 10.—Nineteen twenty-four will be remembered in the iron and steel trade in China as a period of incessant struggle to climb from the abyss into which the import trade had slipped after the war boom. Happily, the worst appears to have been experienced, and there are now good grounds for expecting a steady improvement in trade in 1925, although it is recognized that some time must elapse before normalcy returns. The Germans, on the whole, did a steady trade in many lines, owing to the attractive terms they were in a position to offer buyers.

For a good portion of the past year local iron and steel prices were lower than replacement costs, due to overstocking which, in turn, was attributed to several causes, principally that shipments to interior markets were below normal owing to uncertain conditions prevailing in up-country points, and larger orders placed in anticipation of a good demand which did not materialize.

On the whole, American sellers found it difficult last spring to bid against European sellers, due to the price differential in favor of Europe. Bids for a railroad bridge at that time went to a British concern supplying Belgian steel at a figure much below the American tender. Stocks of iron and steel products in Shanghai in the second quarter were considered large in certain lines. For instance, of galvanized sheets, the steady demand caused the heavy stocks to decrease, but even so, in April and May the stocks were considered heavy. Large supplies were also carried in mild steel bars, while in wire nails the abundant quantity carried was slowly being worked off and fair replacement orders went forward.

Due to the drop in the entire American steel list in July of approximately 10 per cent, American prices then were very little over British, although still some 5 to 10 per cent above Belgian quotations. In August, American prices went down another 10 per cent on bars, structural shapes and plates and, with the improvement in sterling exchange, American rates were on a par with British.

Iron and Steel Markets

SHIPMENTS SUSTAINED

Specifications Stay High and Confidence Strong

Considerable Second Quarter Protection—Concern Over Filling-In Orders—Consumption Uncertain

In the face of another week of little buying of finished steel, confidence of the producers in the strength of the market is undiminished. Its explanation lies in part in the continued flow of specifications against contracts at a rate in excess of shipments in the Chicago district, where operations remain at full capacity, and at a rate equal to shipments in the general Pittsburgh district, where output has not fallen so much as 5 per cent.

Some concern is evidenced that new filling-in orders in the next few weeks may be insufficient to prevent breaking in on backlogs or to avoid reducing operations. After that, general spring activity is counted on to bring on increased buying.

To a greater extent than is generally understood, second quarter protection has already been given regular customers on the price basis ruling prior to the recent advance, as, for example, at 2.10c., Pittsburgh, for bars. This fact, in the light of current production, together with an unusually large tonnage of concrete reinforcing steel yet to be rolled for road construction and other assured public work and increasing demands from the oil industry —these are set up against fears that stocking is in progress.

Reports from secondary consumers are mixed and as yet unconvincing as to consumption. Actualities evidently have not been so good as December promised, and the disappointment appears to be colored by small profit margins. It is definite that jobbers' stocks are full and that mills are piling up buttweld pipe against prospective demand.

The automobile industry continues to pursue a conservative policy, with 60 per cent capacity operations. Farm implement making, while not so active as expected, is at a 60 to 80 per cent rate.

Railroads contributed to the week's business some 13,000 tons of rails and 3000 tons of track supplies, placed in Chicago by the Santa Fe, also 10,000 tons of plates, divided among three plants by the Pennsylvania Railroad, and some 500 cars and 16 locomotives. New inquiries for 694 cars and 23 locomotives appeared.

Desire among the smaller mills for early delivery orders postpones the testing of price advances, particularly in sheets. Efforts to get above 4.60c. for auto-body sheets have been unsuccessful. The Pennsylvania Railroad plate purchase brought out 2c. and 2.05c., Pittsburgh, against 2.10c. asked.

Outstanding in bookings of structural steel is 12,000 tons for an open hearth steel plant building at Detroit for the Ford Motor Co.

Improvement in bolts and nuts is reported. One maker in the Chicago district has increased output from a 60 to a 70 per cent basis.

Wire rod contracts for the next quarter have been entered at $48, Pittsburgh.

Keen competition on pig iron between brokers and furnace interests in the Buffalo district has resulted in a price concession of $1 per ton by a furnace company on a few transactions. At Pittsburgh the price of Bessemer has receded 50c. In other markets prices are fairly well maintained. Importations of pig iron at Eastern ports for the past week exceeded 10,000 tons.

The old material market continues weak with sharp price reductions in nearly all centers. In Chicago, however, transactions of dealers have resulted in advances on some grades.

An inquiry for 160,000 tons of ore from the Ford Motor Co. promises to result in establishing prices on Lake Superior ores for this year, just as an inquiry for 250,000 tons did last year, although a moderate advance is expected instead of the reduction in 1924.

No change occurred in either of THE IRON AGE composite prices this week, finished steel remaining for the third successive week at 2.546c. per lb. and pig iron for the sixth week at $22.50 per ton. Both are lower than a year ago, pig iron by 1½ per cent and finished steel by 8½ per cent.

Pittsburgh

Buyers Follow Conservative Policy—Pig Iron Prices Not Firm

PITTSBURGH, Feb. 17.—New business in steel and specifications against tonnages already received by the mills continue to reflect the more conservative expectations which secondary manufacturers and jobbers lately have acquired as to actual consumptive requirements for the present quarter. It is now apparent that the heavy production and deliveries of December and January have resulted in the upbuilding of stocks in second hands to a point where there is now some desire to know more about the actual requirements of the next few months before adding to them.

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	Feb. 17, 1925	Feb. 10, 1925	Jan. 13, 1925	Feb. 19, 1924
No. 2X, Philadelphia‡	$25.01	$25.01	$25.01	$24.13
No. 2, Valley Furnace†	22.00	22.00	22.50	23.00
No. 2, Southern, Cin'ti†	24.05	24.05	24.05	26.55
No. 2, Birmingham, Ala.†	20.00	20.00	20.00	22.50
No. 2 foundry, Chicago*	24.00	24.00	24.00	24.50
Basic, del'd, eastern Pa.	23.75	23.75	24.25	22.75
Basic, Valley furnace	22.00	22.00	22.00	22.00
Valley Bessemer del. P'gh.	24.26	24.76	24.76	25.26
Malleable, Chicago*	24.00	24.00	24.00	24.50
Malleable, Valley	22.00	22.00	22.50	23.00
Gray forge, Pittsburgh	23.26	23.26	23.76	23.76
L. S. charcoal, Chicago	29.04	29.04	29.04	29.15
Ferromanganese, furnace	115.00	115.00	110.00	107.50
Rails, Billets, Etc., Per Gross Ton:				
O.-h. rails, heavy, at mill	$43.00	$43.00	$43.00	$43.00
Bess. billets, Pittsburgh	37.00	37.00	37.00	40.00
O.-h. billets, Pittsburgh	38.00	38.00	38.00	40.00
O.-h. sheet bars, P'gh.	38.00	38.00	39.00	42.50
Forging billets, base, P'gh.	42.50	42.50	42.50	45.00
O.-h. billets, Phila.	41.67	41.67	41.67	45.17
Wire rods, Pittsburgh	48.00	48.00	48.00	51.00
	Cents	Cents	Cents	Cents
Skelp, gr. steel, P'gh, lb.	2.10	2.10	2.00	2.30
Light rails at mill	1.80	1.80	1.80	2.00
Finished Iron and Steel,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia	2.28	2.28	2.28	2.57
Iron bars, Chicago	2.00	2.00	2.00	2.40
Steel bars, Pittsburgh	2.10	2.10	2.10	2.40
Steel bars, Chicago	2.20	2.20	2.10	2.50
Steel bars, New York	2.44	2.44	2.44	2.74
Tank plates, Pittsburgh	2.00	2.00	2.00	2.40
Tank plates, Chicago	2.30	2.30	2.20	2.60
Tank plates, New York	2.34	2.34	2.34	2.64
Beams, Pittsburgh	2.10	2.10	2.10	2.50
Beams, Chicago	2.30	2.30	2.20	2.60
Beams, New York	2.44	2.44	2.34	2.74
Steel hoops, Pittsburgh	2.50	2.50	2.50	3.00

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.

†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

Sheets, Nails and Wire,	Feb. 17, 1925	Feb. 10, 1925	Jan. 13, 1925	Feb. 19, 1924
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 28, P'gh.	3.50	3.50	3.60	3.85
Sheets, black, No. 28, Chicago dist. mill	3.70	3.70	3.70	...
Sheets, galv., No. 28, P'gh.	4.75	4.75	4.75	5.00
Sheets, galv., No. 28, Chicago dist. mill	4.85	4.85	4.85	...
Sheets, blue, 9 & 10, P'gh.	2.70	2.70	2.70	3.00
Sheets, blue, 9 & 10, Chicago dist. mill	2.80	2.80	2.80	...
Wire nails, Pittsburgh	2.85	2.85	2.85	3.00
Wire nails, Chicago dist. mill	2.95	2.95	2.95	...
Plain wire, Pittsburgh	2.60	2.60	2.60	2.75
Plain wire, Chicago dist. mill	2.70	2.70	2.70	...
Barbed wire, galv., P'gh.	3.55	3.55	3.55	3.80
Barbed wire, galv., Chicago dist. mill	3.65	3.65	3.65	...
Tin plate, 100 lb. box, P'gh.	$5.50	$5.50	$5.50	$5.50
Old Material, Per Gross Ton:				
Carwheels, Chicago	$19.50	$19.50	$22.50	$21.50
Carwheels, Philadelphia	19.50	19.50	19.50	20.00
Heavy steel scrap, P'gh.	19.00	20.00	22.00	21.00
Heavy steel scrap, Phila.	17.50	18.00	20.00	18.00
Heavy steel scrap, Ch'go.	18.00	17.50	20.50	18.00
No. 1 cast, Pittsburgh	20.50	20.50	19.50	21.50
No. 1 cast, Philadelphia	19.00	19.00	20.50	19.50
No. 1 cast, Ch'go (net ton)	19.00	18.50	20.50	21.00
No. 1 RR. wrot. Phila.	20.00	20.00	21.00	21.00
No. 1 RR. wrot. Ch'go (net)	16.50	16.00	18.00	15.50
Coke, Connellsville, Per Net Ton at Oven:				
Furnace coke, prompt	$3.50	$3.75	$4.00	$4.15
Foundry coke, prompt	4.25	4.25	5.00	5.00
Metals,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York	15.00	15.12½	15.25	13.62½
Electrolytic copper, refinery	14.50	14.62½	14.87½	13.25
Zinc, St. Louis	7.55	7.55	7.87½	6.92½
Zinc, New York	7.90	7.90	8.22½	7.27½
Lead, St. Louis	9.12½	9.37½	10.35	8.90
Lead, New York	9.40	9.55	10.60	9.00
Tin (Straits), New York	57.12½	57.12½	59.80	53.50
Antimony (Asiatic), N. Y.	21.50	20.00	17.50	11.00

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market report on other pages.

THE IRON AGE Composite Prices

Feb. 17, 1925, Finished Steel, 2.546c. Per Lb.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets. These products constitute 88 per cent of the United States output of finished steel.

Feb. 10, 1925,	2.546c.
Jan. 20, 1925,	2.560c.
Feb. 18, 1924,	2.775c.
10-year pre-war average,	1.689c.

Feb. 17, 1925, Pig Iron, $22.50 Per Gross Ton

Based on average of basic and foundry irons, the basic being Valley quotation, the foundry an average of Chicago, Philadelphia and Birmingham.

Feb. 10, 1925,	$22.50
Jan. 20, 1925,	22.50
Feb. 18, 1924,	22.86
10-year pre-war average,	15.72

	High 1923	High 1924	High 1925		Low 1925	Low 1924	Low 1923
Finished Steel	2.824c., April 24	2.789c., Jan. 15	2.560c., Jan. 6		2.546c., Feb. 3	2.460c., Oct. 14	2.446c., Jan. 2
Pig Iron	$30.86, March 20	$22.88, Feb. 26	$22.50, Jan. 13		$22.25, Jan. 6	$19.21, Nov. 3	$20.77, Nov. 20

There is no evidence that buyers have overestimated their steel requirements, considering that the railroad and building programs are so extensive for 1925, and that the steel industry yet is to feel the effects of probable betterment in oil and automotive industries. Just now when consumption of steel usually is low, it does look as though buyers in their purchases had exceeded their real needs, but that aspect will no doubt change considerably as the spring approaches. If there has been excess on the trading side of the market, it probably will be found in the fact that the mills opened their order gates too wide in November and kept them open too long with the result that they still are heavily obligated with low priced business.

Shipments of steel are running ahead of incoming business and this is causing some easing down in steel plant operating schedules. The general average of this and nearby districts in ingot production this week is below 85 per cent of capacity.

The steel price situation is little changed. Difficulty is experienced in obtaining the advances announced in the past two weeks because buyers generally are so well covered against their immediate needs at much lower levels that there is no necessity for them to seek additional tonnage.

The market in the primary materials still is inclined lower under limited demands. A further drop of $1 a ton in heavy steel scrap has carried the price $3.50 a ton below the January peak price. Still lower prices are noted in coke due to the fact that there seems to be no outlet for production over and above that required by contracts. An inquiry for 1000 tons of Bessemer iron brought out a price concession of 50c. a ton and pig iron prices in general are not very firm.

Pig Iron.—Prices are being maintained in this market only with the greatest difficulty because the continued paucity of demand is beginning to make producers a little uneasy and as the prospect now is that second quarter coke supplies will be available at fairly reasonable prices, the furnace men are deprived of what price support would be afforded by high costing fuel. Tests of the pig iron market have been very few in the past week. One Pittsburgh district sheet maker closed for 1000 tons each of basic and Bessemer iron and was able to secure the latter grade at $22.50, Valley furnace, or 50c. a ton below last week's price, while the basic iron was secured at a price equivalent to about $21.50 at Valley furnace. The basic iron, however, is not Valley iron and the price of this grade at Valley furnaces still is $22. Some makers of Bessemer iron still are holding to $23 and have made several small sales at that figure. Inquiry for 500 tons of Bessemer iron is reported from a Latrobe, Pa., ingot mold maker. We note a small sale of malleable iron at $22.50, Valley furnace. Sales of foundry iron have been infrequent and usually small in size. Prices are holding reasonably well at $22 to $22.50, Valley furnace, for No. 2.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being $1.76 per gross ton:

Basic	$22.00
Bessemer	$22.50 to 23.00
Gray forge	$21.50 to 22.00
No. 2 foundry	22.00 to 22.50
No. 3 foundry	21.50 to 22.00
Malleable	22.00 to 22.50
Low phosphorus, copper free	29.00

Ferroalloys.—Consumers are still specifying fairly freely against contracts, but as they are meeting all their requirements that way there is a dearth of new business. Recent quotations are holding, but they found and are finding almost no basis in sales, this because, in a number of directions, consumers are very well covered at prices well below those now named. A recent effort to market a minimum carload of ferromanganese, an overshipment on a contract, at $114, Baltimore, failed to interest anyone and was withdrawn. Prices are given on page 591.

Semi-Finished Steel.—Sheet bars are becoming easier to buy than to sell, and $38, Pittsburgh or Youngstown, now appears to the top of the market for tonnages of either open-hearth or Bessemer bars for shipment over the next 30 to 45 days. It will be recalled that for a time mills that figured on having any open-hearth steel available over and above their own requirements and those of their regular customers for the present quarter were not willing to go below $40 for sheet bars. Supplying that demand was no strain upon capacity and with sheet production running about 10 per cent less than for last month, the cut is causing gaps in bar mill schedules. There is the additional urge to sales in the fact that there is a margin of profit in sheet bars at $38 and practically none in black sheets for early delivery, as the prevailing price is 3.50c., base, which with the cash discounts means a net price of about 3.43c. No sales of sheet bars are noted, but on the basis of definite offers by makers they are quotable for early delivery at not more than $38, Pittsburgh or Youngstown. Only one or two makers in the Pittsburgh district seem willing to quote on forging billets, but not many inquiries are being made. Recent prices on other forms of semi-finished steel appear to be holding, but demands are hardly large enough to provide a real test. Carnegie Steel Co. last week made steel at the rate of 90 per cent of capacity; it is starting this week at about 85 per cent, but that is slightly above the general average of this general area, which is affected by the relatively low rate in Youngstown. Curtailment at that point is not due, as suggested by newspapers, to the need of plant repairs, but rather because specifications were worked out pretty rapidly at the recent high operating rate and curtailment was necessary to give secondary consumption a chance to make an impress upon existing supplies. Prices are given on page 591.

Iron and Steel Bars.—There are reports that 2.20c., base, Pittsburgh district mills, has been done on small lots of steel bars, but the claim is not made that this price is yet really established. The test is delayed, because current demands are chiefly specifications against old and lower-priced contracts and the requirements of secondary manufacturers and distributors have not yet mounted to a point where they cannot be met from material on contract. The hopes of makers as to 2.20c. becoming a solid price hinge largely on how large are the spring demands upon makers of bolts and nuts, of cold-finished steel bars and farm implements. Iron bars are steady as to price and demand. Prices are given on page 590.

Plates.—The present base price of Pittsburgh district makers of 2.20c. still is untested, since new demands are moderate in size and number and too many of the larger producers are too well covered at lower prices to be much interested in additional supplies at present. It is admitted that 2.10c., Pittsburgh, is the top price on plates in Eastern territory. Car plates form the larger part of local mill obligations and car builders are not releasing tonnages with so much freedom as they did in January. Prices derive a measure of firmness from the fact that only a few mills can show much profit at under 2.20c. and selling pressure is somewhat retained. Prices are given on page 590.

Structural Material.—The 2.20c. base, now generally quoted by mills here, continues merely nominal, since consumers have so much protection at lower levels that they do not find it necessary to present many new tonnages for quotation. The position of local fabricating shops in the matter of early shipment business is not so strong that they can reflect the higher plain materials prices in their fabricated steel quotations. Almost all shops have good order books, but getting investors to specify has been rather difficult. Plain material prices are given on page 590.

Rails and Track Supplies.—Local makers of tie plates are figuring on the Baltimore & Ohio Railway inquiry, which amounts to about 6000 tons. The expectation is that the order will be split and makers in the several producing districts located on the company's lines will get a share. Otherwise, there are no big inquiries before local makers of track supplies, who still are getting fair specifications on old orders, but not much new business. Light rails still are dragging. Prices are given on page 590.

Sheets.—Larger producers met the situation of heavy November and December bookings in different fashion. Independents generally seem to have decided that much more business would come out after the turn of the year and accordingly increased production rapidly and worked out of their specified business. The American Sheet & Tin Plate Co. adopted a policy of making its business stretch out as far as possible. The result is that the former are not very well provided with "live" business for early delivery and have had to cut production about 10 per cent from the January rate, when it was about 95 per cent of capacity. Specifications of the Steel Corporation sheet-making subsidiary are sufficient to maintain production up toward 85 per cent, where it has been the past few weeks. This company is considerably behind in its Western galvanized sheet business. Price irregularity continues on early delivery business in almost all finishes, but is more pronounced in black than in the other finishes. Releases against automobile body sheets are gradually gaining. Prices are given on page 590.

Tin Plate.—The situation presents no important changes. The independent makers still are operating at a higher rate than the American Sheet & Tin Plate Co., but they also are further along in the completion of their obligations on standard sizes than is that company, which has not this year been "laying down" as much production as in recent years. Prices do not change, and there are no suggestions of a change from $5.50 per base box, Pittsburgh, for standard cokes for domestic shipment.

Wire Products.—Makers in this and nearby districts are reasonably well provided with business, but it is chiefly in low priced contracts. Evidently there is some extending of contracts which expired between Jan. 15 and Jan. 31, as specifications still are coming in against nails at $2.75 and wire at $2.50, base Pittsburgh. Strictly new business is somewhat quieter than it has been because jobbers and manufacturing consumers are pretty well filled up and are waiting on secondary demands to improve before making fresh ventures into the market. Coated nails were not included in the latest advance by the American Steel & Wire Co., which continues to quote them at $2.25, base, per count keg, Pittsburgh. Even that price, however, is hard to obtain and the market based on sales is not over $2.15. Prices are given on page 590.

Tubular Goods.—The week has brought about no striking changes in general conditions. Recent orders for line pipe mean a reasonably good engagement of lap-weld furnace capacity and with the oil situation growing better from both a supply and price viewpoint, a further expansion of operations appears likely. Demand for butt weld sizes of pipe still is good, and capacity is very well engaged. Competition for boiler tube business is sharp and prices still are favorable to buyers. Discounts are given on page 590.

Cold-Finished Steel Bars.—Business is good, but not active. The conservative buying policy of the automotive industry explains this condition. The market is firm at 2.80c., base Pittsburgh district mills, but buyers are so heavily covered at lower levels that there is no real test of the present quotation.

Hot-Rolled Flats.—The revised card of extras issued by a number of makers early this month, and published on page 588 of this issue, has been generally adopted, and with practically all of the capacity observing the new card there has been an abandonment of the several base prices that were found necessary with the old card of extras. The common base price on hoops, bands and strips now is 2.50c., Pittsburgh district mills, and except on wide material, where there is still some price irregularity, that price is now the ruling one. Incoming business is not equaling shipments against old orders. Prices are given on page 590.

Cold-Rolled Strips.—Demands upon makers in this district are not so heavy that they could not take on a good many more. The price situation shows no special change. On large lots the market is still 4c. base, Pittsburgh, while for the smaller tonnages 4.15c. is commonly quoted.

Bolts, Nuts and Rivets.—Rivet makers still find it necessary to shade quotations on sizable lots of large rivets, but on contracts $2.60 base, Pittsburgh, is well maintained. Bolt and nut business is improving, but not with much rapidity. Prices and discounts are given on page 591.

Coke and Coal.—Coke prices still are soft. Pig iron producers are no longer taking maximum quotas of their contracts and this has resulted in the recurrence of unconsigned cars, which have been very hard to move. On such lots $3.75 per net ton at ovens has become a maximum or extreme price, while sales are noted as low as $3.50. There also appears to be an ample supply of spot foundry coke, with prices ranging all the way from $4.25 to $5, but only occasional sales are noted at the higher price. Negotiations for second quarter tonnages of furnace coke still are in abeyance. The question of wage revisions is being mooted but no definite action has taken place among the larger producers. It is believed that coke producers would listen to $4.50 for second quarter furnace coke, but there have been no definite bids of this or any other price. The coal market is still very weak because there is not nearly enough demand to take up the supply. Prices are given on page 591.

Old Materials.—Dealers still are engaged in the so far unfruitful effort of trying to find a price level at which they can sell some scrap into consumption. With a somewhat lower rate of steel works operations likely in the near future, steel mills are loath to make a bid in the fear that they will pay more than they would by waiting. While the past week has seen sales of heavy melting grade, usually in small lots, at from $20 down to $19, the latter figure best typifies present possibilities, good-sized tonnages for delivery in 30 days or more having been offered by some of the dealers. This would mean short selling and the supply situation is not regarded as easy enough to encourage offerings at less than $19. Scrap is beginning to look cheap in relation to pig iron and there are some expectations that this will mean a heavier ratio of scrap to pig iron in the open-hearth mix and some liberal scrap purchases a little below present prices. In a general way the market is weak, except for that prospect, for demand for consumption is light in all directions and the support usually afforded by short contracts is lacking, since dealers are so well caught up with their sales. Heavy melting steel now is off $3.50 from the high point of the year.

We quote for delivery to consumers' mill in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows:

Per Gross Ton	
Heavy melting steel	$19.00 to $19.50
No. 1 cast, cupola size	20.50 to 21.00
Rails for rolling, Newark and Cambridge, Ohio; Cumberland, Md.; Huntington, W. Va., and Franklin, Pa.	20.50 to 21.00
Compressed sheet steel	17.50 to 18.00
Bundled sheets, sides and ends	16.50 to 17.00
Railroad knuckles and couplers	22.00 to 22.50
Railroad coil and leaf springs	21.50 to 22.00
Low phosphorus blooms and billet ends	24.50 to 25.00
Low phosphorus plate and other material	23.50 to 24.00
Railroad malleable	18.50 to 19.00
Steel car axles	21.50 to 22.50
Cast iron wheels	20.00 to 20.50
Rolled steel wheels	21.50 to 22.50
Machine shop turnings	15.50 to 16.00
Short shoveling turnings	15.50 to 16.00
Sheet bar crops	20.50 to 21.00
Heavy steel axle turnings	18.00 to 18.50
Short mixed borings and turnings	15.50 to 16.00
Heavy breakable cast	18.00 to 18.50
Stove plate	17.00 to 17.50
Cast iron borings	15.50 to 16.00
No. 1 railroad wrought	16.00 to 16.50
No. 2 railroad wrought	19.00 to 19.50

MERGER DISCUSSED

No Conclusion Reached, However, in Eastern Steel and Penn Seaboard Negotiations

Officials of the Penn Seaboard Steel Corporation, Philadelphia, and the Eastern Steel Co., Pottsville, Pa., met in New York Tuesday to discuss plans for merging the interests. Nothing was definitely determined and negotiations may be abandoned or consummated soon.

In case the companies combine it may reasonably be expected that expansion of one or both of the main properties will ensue. Capital for such project will be readily available. What course the expansion will take is a matter to be developed. A large stockholder in one of the companies, himself a steel man of many years, believes that it will be found advantageous to enlarge the Pottsville properties, supplementing present lines and expanding vertically.

Referring to the status of negotiations, Edward L. Herndon of the Eastern Steel Co., said that "nothing has been signed or agreed upon as yet, but negotiations seem to be getting closer to what may be a confirmation." Frazier & Co., Philadelphia and New York, who have been reported to be handling the financial side of the proposed purchase, are the bankers of the Penn Seaboard company. Commenting upon the rumors that certain large stockholders and directors of the Eastern Steel Co. will be among the directors of the new company, Mr. Herndon pointed out that Harry Payne Whitney, though still a large stockholder in the Eastern company, has not been a director since 1919 and that Charles D. Wetmore, while still a stockholder, has not been a director for seven years.

According to reports in the New York financial district the proposal of the Penn Seaboard Steel Corporation to take over the Eastern Steel Co. provides $15 a share for the common stock of the company, par value $4,000,000, and $50 a share for the 7 per cent cumulative preferred stock, par value $2,200,000.

Chicago

Buying of Steel Limited, but Production Has Not Decreased

CHICAGO, Feb. 17.—Buying of finished steel is light, but specifications remain heavy enough to warrant undiminished production. In fact, in bars, plates and shapes releases are still heavier than shipments. Mills rolling these commodities are not yet showing much concern about new business. Their problem is to make deliveries satisfactory to their customers and that they are bending every effort in that direction is indicated by the present high rate of operations. The past week has developed no further changes in the operating situation. The two leading interests remain on a 100 per cent ingot capacity basis and 33 out of 34 steel works blast furnaces continue active. In some of the lighter lines, like wire products, production has not yet exceeded 80 or 85 per cent, but with spring seasonal demands developing, further improvement is looked for.

Specifications for wire products were stimulated by the recent advance, although little fresh business has been booked thus far at the new prices. Steel pipe is relatively quiet owing to the fact that jobbers have not reduced their stocks materially during the winter. This situation may change with a revival of building in the spring.

The Santa Fe has placed additional orders for 12,975 tons of rails and 3000 tons of track supplies. Otherwise there has been little railroad buying during the week and the absence of car orders is particularly disappointing. Likewise little oil storage tank work is being placed and structural steel lettings are light.

The scrap market, after declining for four consecutive weeks, has advanced 50c. a ton on purchases by dealers to fill short sales. Pig iron, though quiet, is strong at $24 base, furnace.

Ferroalloys.—The market is quiet, but another advance in ferro-manganese is regarded as a possibility in view of the rise in sterling.

We quote 80 per cent ferromanganese, $122.56, delivered; 50 per cent ferrosilicon for 1925 delivery, $85, delivered; spiegeleisen, 18 to 22 per cent, $41.58, delivered.

Fluorspar.—A large producer contemplates advancing 85 per cent material to $21 and 80 per cent to $20 per net ton, f.o.b. mines.

Plates.—Approximately 35,000 tons of plates, shapes and bars, required for cars placed in this market last week, are expected to be furnished by local mills. New oil tank construction is light, although the Chicago Bridge & Iron Works has booked 1200 tons for four storage tanks to be erected at a Southwestern location.

The mill quotation is 2.30c., Chicago. Jobbers quote 3.10c. for plates out of stock.

Pig Iron.—Buying is limited, being restricted largely to small tonnages for spot shipments. The position of local producers, however, still appears strong. Their bookings carry them well into second quarter and releases against contracts are still coming in at a rate which is pressing active merchant capacity. While some melters have held up shipments, the tonnage involved has not been sufficient to affect the situation materially; on the contrary, one furnace interest has actually fallen behind on deliveries. The time is apparently not yet close at hand when producers will feel the need of new business to such an extent as to be willing to shade prices. Several melters have held sizable inquiries before the trade for several weeks in the hope of buying at concessions, but without success. One of them who had been inquiring for 300 tons of foundry in the higher silicon grades finally bought at the full market quotations. Among new inquiries may be mentioned one from Indiana for 500 tons of southern for second quarter delivery. Southern prices appear to be unchanged, although a special lot of barge and rail iron now en route will be offered at $25.18, delivered Chicago, or 50c. below the ruling quotation on that material. Sales of charcoal have been confined to car lots. A Wisconsin melter has bought a carload of 14 to 16 per cent ferrosilicon at an undisclosed concession. An Iowa melter is inquiring for 1000 tons of 4 per cent iron.

Quotations on Northern foundry, high phosphorus malleable and basic iron are f.o.b. local furnaces and do not include an average switching charge of 61c. per ton. Other prices are for iron delivered at consumers' yards:

Northern No. 2 foundry, sil. 1.75 to 2.25	$24.00
Northern No. 1 foundry, sil. 2.25 to 2.75	25.00
Malleable, not over 2.25 sil.	24.00
Basic	24.00
High phosphorus	24.00
Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago	29.04
Southern No. 2 (barge and rail)	$25.18 to 25.68
Southern No. 2, sil. 1.75 to 2.25	26.51 to 27.01
Low phos., sil. 1 to 2 per cent, copper free	33.29 to 33.79
Silvery, sil. 8 per cent	35.29
Electric ferrosilicon, 14 to 16 per cent	47.42

Sheets.—Current demand is light, although new business has been taken at both the new and the old prices, the latter having been named by outside mills. Local producers have bookings which will carry them through March. Seasonal spring demands are expected to make themselves felt in the sheet market before March 1. A good volume of buying is looked for in the Southwest, where the agricultural situation has shown marked improvement.

Chicago delivered prices from mill are 3.75c. to 3.85c. for No. 28 black, 2.85c. to 2.95c. for No. 10 blue annealed, 4.90c. to 5c. for No. 28 galvanized. Delivered prices at other Western points are equal to the freight from Gary plus the mill prices, which are 5c. per 100 lb. lower than the Chicago delivered prices.

Jobbers quote f.o.b. Chicago: 3.80c. base for blue annealed, 4.50c. base for black, and 5.50c. base for galvanized.

Bars.—New business in soft steel bars is light, but specifications continue to exceed shipments. There has been no notable change in the average rate of activity among secondary lines, retardation in some directions being balanced by accelerated operations in others. The automobile industry continues to pursue a conservative policy with operations averaging about 60 per cent of capacity. Farm implement makers, while not enjoying as heavy business as had been expected, are running at from 60 to 80 per cent. Demand for bar iron has shown some improvement, although prices continue to range from 2c. to 2.10c., Chicago. Rail steel bar mills are in a comfortable position owing to improved demand from farm implement industry, heavy bookings of reinforcing steel, normal business from bedstead makers, and seasonal demand for fence posts.

Mill prices are: Mild steel bars, 2.20c.; common bar iron, 2c. to 2.10c., Chicago; rail steel, 2.10c., Chicago mill.

Jobbers quote 3c. for steel bars out of warehouse. The warehouse quotations on cold-rolled steel bars and shafting are 3.80c. for rounds and 4.30c. for flats, squares and hexagons; 4.15c. for hoops and 3.65c. for bands.

Jobbers quote hard and medium deformed steel bars at 2.70c.

Rails and Track Supplies.—The Santa Fe has placed additional orders for rails amounting to 12,975 tons, divided equally between the Illinois Steel Co. and the Inland Steel Co. It also bought bolts, spikes, tie plates and angle bars, aggregating 3000 tons, likewise equally divided between the two local mills. The carriers continue to press producers for shipments against their rail contracts, but in view of the demands on their other departments, mills are having difficulty in making the deliveries desired.

Standard Bessemer and open-hearth rails, $43; light rails, rolled from billets, 1.90c. to 2c., f.o.b. makers' mill.

Standard railroad spikes, 3c. mill; track bolts with square nuts, 4c. mill; steel tie plates, 2.45c., f.o.b. mill; angle bars, 2.75c., f.o.b. mill

Jobbers quote standard spikes out of warehouse at 3.55c. base, and track bolts, 4.45c. base.

Cast Iron Pipe.—Detroit has placed 500 tons of 12-in. class C with the Lynchburg Foundry Co. and 500 tons of 12-in. class C and 3000 tons of 6- and 8-in. class B with the United States Cast Iron Pipe & Foundry Co. The Lynchburg Foundry Co. is low bidder on

850 tons of 24- and 30-in. for St. Paul. The United States company is low on 1600 tons of 4- to 16-in. for Buffalo. James B. Clow & Sons are low on 700 tons of 10- to 24-in. and 100 tons of fittings for Toledo. Chicago has awarded 100 tons of fittings to the American Cast Iron Pipe Co. Pending work includes:

Duluth, Minn., 2000 tons, 6- to 12-in., bids to be in Feb. 20.

New Castle, Ind., 115 tons of 10 in., 42 tons of 6-in. and 15 tons of 4-in. class C, Feb. 16.

We quote per net ton, f.o.b. Chicago, as follows: Water pipe, 4-in., $54.20; 6-in. and over, $50.20; Class A and gas pipe, $4 extra.

Structural Material.—Fabricating awards are light, but a large aggregate tonnage is coming up for bids. Figures on the structural steel for the Stevens Hotel, Chicago, 17,000 tons, will be taken March 2. Another long pending project, the Lake Shore Athletic Club, Chicago, 7000 tons, has finally been financed and the general contract has been awarded to the Hegeman-Harris Co., with the likelihood that the steel will be bought shortly. The mills continue to receive heavy specifications against their plain material commitments, but new buying is light.

The mill quotation on plain material is 2.30c., Chicago. Jobbers quote 3.10c. for plain material out of warehouse.

Bolts, Nuts and Rivets.—While new business still leaves much to be desired, it is improving and together with specifications has permitted some betterment in the operations of bolt and nut plants. One factory, for example, has been able to increase its output, which had been on a 60 per cent basis, to 70 per cent. Demand for rivets shows little change with prices still unsteady. For mill prices, see page 591.

Jobbers quote structural rivets 3.50c.; boiler rivets, 3.70c.; machine bolts up to ⅝ x 4 in., 55 per cent off; larger sizes, 55 off; carriage bolts up to ⅝ x 4 in., 50 off; larger sizes, 50 off; hot pressed nuts, squared, tapped or blank, $3.50 off; hot pressed nuts, hexagons, tapped or blank, $4 off; coach or lag screws, 60 per cent off.

Wire Products.—Specifications have improved, but as yet new business at the advanced prices has been light. For mill prices see page 590.

Reinforcing Bars.—The week has brought out a considerable tonnage in new lettings, the most notable of which was 2700 tons of rail steel for the Hibbard, Spencer, Bartlett & Co. warehouse, Chicago, which was awarded to the Inland Steel Co. It is interesting to note that the four largest tonnages placed within the past three weeks aggregating 10,200 tons, went to rail steel producers. In addition to the 2700 tons for the Hibbard, Spencer, Bartlett & Co. building, there were 3300 tons for the Sears, Roebuck & Co. warehouse, Kansas City, 3200 tons for the produce market, Chicago, and 1000 tons for the Jackson Shore Hotel, Chicago. Among new projects one of the largest is the Vadnias conduit for the water works department, St. Paul, 1600 tons. The Stevens Hotel will again come up for figures on March 18, and present estimates place the reinforcing at 1600 tons. The ruling quotation on billet reinforcing bars is 2.70c., Chicago warehouse.

Lettings include:

Hibbard, Spencer, Bartlett & Co., warehouse, Chicago, 2700 tons to Inland Steel Co.

Sears, Roebuck & Co., warehouse, Kansas City, Mo., 700 tons of spirals to J. Goldberg & Sons Structural Steel Co., Kansas City.

Chicago & North Shore Electric R. R. improvements, 400 tons to American System of Reinforcing.

American Linen Supply Co., plant, Chicago, 400 tons to Concrete Engineering co.

Felician Sisters' convent, Chicago, 270 tons to Concrete Steel Co.

Miller & Hart, Inc., packing plant, Union Stock Yards, Chicago, 200 tons to American System of Reinforcing.

Kinzie Street garage, Chicago, 175 tons to Barton Spiderweb System Co.

Pederson garage, 1634 Wabash Avenue, Chicago, 165 tons to Concrete Engineering Co.

Winona, Minn., high school building, 150 tons to C. A. P. Turner Co.

Pending work includes:

Vadnias Conduit, water department, St. Paul, Minn., 1600 tons.

Stevens Hotel building, Chicago, 1600 tons, general contract bids to be taken March 18.

Hospital, Kenosha, Wis., N. Max Dunning, 304 South Wabash Avenue, Chicago, architect, 100 tons.

Old Material.—Although consumer buying is largely an absent quantity, purchases by dealers against short sales have caused most grades to advance 50c. a ton. Many brokers have found that they sold too much to make proper continuous shipments and they are therefore willing to pay the advance, particularly when filling contracts booked at higher prices. Holders of scrap, on the other hand, are showing an increasing unwillingness to sell. It is conceded, however, that the recovery in scrap prices will not hold unless there is a general resumption of buying by consumers. Among the few consumer purchases of the week may be mentioned orders for iron mill grades and stove plate. Railroad offerings include the Rock Island, 4500 tons; the Soo Line, 750 tons; the Grand Trunk, 500 tons.

We quote delivery in consumers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton	
Iron rails	$20.00 to $20.50
Cast iron car wheels	19.50 to 20.00
Relaying rails, 56 and 60 lb.	25.00 to 26.00
Relaying rails, 65 lb. and heavier	26.00 to 31.00
Forged steel car wheels	21.50 to 22.00
Railroad tires, charging box size	22.50 to 23.00
Railroad leaf springs, cut apart	22.00 to 22.50
Rails for rolling	19.50 to 20.00
Steel rails, less than 3 ft.	20.50 to 21.00
Heavy melting steel	18.00 to 18.50
Frogs, switches and guards cut apart	18.50 to 19.00
Shoveling steel	17.75 to 18.25
Drop forge flashings	14.00 to 14.50
Hydraulic compressed sheets	15.00 to 15.50
Axle turnings	16.00 to 16.50
Steel angle bars	19.00 to 19.50
Steel knuckles and couplers	21.50 to 22.00
Coil springs	22.50 to 23.00
Low phos. punchings	20.00 to 20.50
Machine shop turnings	12.00 to 12.50
Cast borings	15.00 to 15.25
Short shoveling turnings	15.00 to 15.25
Railroad malleable	20.00 to 20.50
Agricultural malleable	19.00 to 19.50
Per Net Ton	
Iron angle and splice bars	20.00 to 20.50
Iron arch bars and transoms	21.00 to 21.50
Iron car axles	27.00 to 27.50
Steel car axles	19.00 to 19.50
No. 1 busheling	15.00 to 15.50
No. 2 busheling	11.50 to 12.00
Pipes and flues	12.50 to 13.00
No. 1 railroad wrought	16.50 to 17.00
No. 2 railroad wrought	16.00 to 16.50
No. 1 machinery cast	19.00 to 19.50
No. 1 railroad cast	17.50 to 18.00
No. 1 agricultural cast	17.50 to 18.00
Locomotive tires, smooth	18.50 to 19.00
Stove plate	15.00 to 15.50
Grate bars	15.00 to 15.50
Brake shoes	14.50 to 15.00

Structural Steel Institute of California Organized at San Francisco

SAN FRANCISCO, Feb. 17.—Nineteen fabricators formally organized the Structural Steel Institute of California Feb. 16 at the St. Francis Hotel, San Francisco, by the adoption of a constitution and by-laws, the appointment of John L. Clymer as manager and the election of an executive committee composed of P. F. Gillespie, Judson Mfg. Co.; Harry Mortenson, Mortenson Construction Co.; Howard Morris, Western Iron Works; Charles E. Spencer, California Steel Co.; and S. S. Herrick, Herrick Iron Works. An office has been opened at 215 Market Street, where weekly meetings will be held Mondays.

John L. Clymer, manager of the new organization, came to San Francisco in 1916 as Pacific Coast manager for the American Red Cross. He was later a member of the faculty of the University of Southern California in charge of the extension and development program. During 1924 he was director of the speakers' bureau of the Republican National Committee in San Francisco. He is a graduate of Amherst College, class of 1904. Speaking of the plans for the new organization, Mr. Clymer said: "It is the purpose of the Structural Steel Institute of California to operate locally along similar lines to those that have been followed so constructively by the American Institute of Steel Construction, as outlined in the Del Monte steel conference by Charles F. Abbott."

New York

Considerable Second Quarter Steel Covered—Buffalo Pig Iron Weak

NEW YORK, Feb. 17.—Virtually all of the pig iron inquired for several weeks ago by the Worthington Pump & Machinery Corporation has at last been placed and the Thatcher Co., which has been in the market for from 3500 to 5000 tons for third quarter delivery, has purchased 3500 tons. Aside from these purchases, the market has been almost bare of business placed and new inquiries definitely sent out are few, although reports of several companies sounding the market are current. In eastern Pennsylvania, $23.50, furnace, for No. 2 plain continues to be the minimum, with few sales made above that price, but owing to the strong competition of brokers on Buffalo iron, at least one furnace company has gone to $22 on No. 2 plain on exceptional transactions and in spite of other furnaces holding to $23, the market is weak in that district.

The importing of iron from various foreign countries continues to be viewed with alarm by Eastern furnace interests, but nothing definite is being done in regard to the anti-dumping investigation beyond what was reported last week. An importing house states that Indian iron has recently been sold at $27, Galveston, and that reports of very low prices on that iron are incorrect.

We quote delivered in the New York district as follows, having added to furnace price $2.52 freight from eastern Pennsylvania, $4.91 from Buffalo and $5.44 from Virginia:

East. Pa. No. 2, sil. 1.75 to 2.25	$26.02
East. Pa. No. 1X fdy., sil. 2.75 to 3.25	27.52
East. Pa. No. 2X fdy., sil. 2.25 to 2.75	26.52
Buffalo, sil. 1.75 to 2.25	$26.91 to 27.91
No. 2 Virginia, sil. 1.75 to 2.25	29.44 to 30.44

Ferroalloys.—There is an entire absence of demand for even small lots of ferromanganese, but there is no change in prices. Sales of a few small and carload lots of spiegeleisen are noted at recently established prices. Specifications on contracts for both materials are heavy.

Cast Iron Pipe.—Makers of pressure pipe are fairly well booked in advance and prices are rather firm, despite the conditions in the pig iron market and the competition of Continental cast iron pipe. The city of New York has again delayed inquiry for its spring requirements, which probably will not appear for bids for another month. On Feb. 20 the City of Mount Vernon, N. Y., will open bids on 1000 tons of 24-in. pipe and the City of Oneida, N. Y., on about 10,000 tons of mostly 20-in. water pipe. There is but little new buying of soil pipe, but makers are working on a fair backlog of business and jobbers show no inclination to delay shipments. As a result of the light buying present discounts are untested.

We quote pressure pipe per net ton, f.o.b. New York, in carload lots, as follows: 6-in. and larger, $54.60 to $55.60; 4-in. and 5-in., $59.60 to $60.60; 3-in., $69.60 to $70.60, with $5 additional for Class A and gas pipe. Discounts on both Northern and Southern makers of soil pipe, f.o.b. New York, are as follows: 6-in., 40 to 41¼ per cent off list; heavy, 50 to 51¼ per cent off list.

Warehouse Business.—Improvement is noted in some lines, particularly galvanized sheets, but business is far from active. In structural steel and plates, a fair volume was done. Export orders featured, one large independent placing 60 tons for a South American refinery. Mills vie for all export orders, however small, and still take considerable domestic business. Most prices are firm, but some shading appeared in spring steel sales. In welded pipe there is fair activity. Prices are given on page 608.

Finished Iron and Steel.—In spite of a small volume of fresh buying, a marked feeling of optimism prevails among representatives of the larger mills. This appears to be due in part to the fact that all of the larger customers of these mills have apparently been given protection for the second quarter at the prices ruling before the last advance, namely, at a basis, as for bars, of 2.10c., Pittsburgh. The result is a promising looking order book backed further by a considerable tonnage of first quarter business of a definite character that has been held up partly through bad weather. Included in the latter classification is an unusually large amount of reinforcing steel for public work, chiefly road building, in which no chance is being taken of construction in freezing weather. In short, a tonnage of large proportions is apparently waiting good weather to materialize into definite orders against the rolling mills and a continuing flow of orders is promised for the second quarter, seeing that most current contracts are being taken out in full. It is the matter of continuing orders for the rest of the present quarter that is the more doubtful. Much is made, also, of the expanding demand of the oil industry, and while periodic puncturing of the market by importers of foreign steel is disturbing as to price, if not as to volume, the situation seems to be definitely better than a week ago. Specifications reaching a number of the larger producers have been equal to the shipments, so that the backlog of orders stands substantially at the figures of the first of the month. On the other hand, jobbers' stocks are of fair proportions, and as befits the season they are not buying butt weld pipe; some pipe mills are stocking material against the expected demand. If anything, there has been an improvement in pipe and wire. Small lots of steel have commanded the upper prices, such as the case of 70 tons of bars being sold at 2.20c., and plates appear more difficult to buy at less than 2.10c., Pittsburgh basis, though 2c. has not entirely disappeared. The Gilbert & Barker Mfg. Co., Springfield, Mass., will supply 2000 tanks for the Standard Oil Co. of N. J., taking about 1300 tons of 3/16-in. plate, but it is understood that plate material in stock will be used. One definite item of second quarter business reported covers 750 tons of wire rods at $48, an advance of $3 a ton above the price applying to the current quarter contract.

We quote for mill shipments, New York delivery, as follows: Soft steel bars, 2.44c. to 2.54c.; plates, 2.34c. to 2.44c.; structural shapes, 2.44c. to 2.54c.

Old Material.—The downward trend of prices continues with the market today determined for the most part by a few transactions between brokers with contracts and dealers with scrap on hand. With the exception of small lots occasionally shipped in completion of contracts with other eastern Pennsylvania mills, practically all the heavy melting steel being purchased now is for delivery to Bethlehem, Pa. While $17 to $18 per ton is a fair range of the prices brokers would pay today for heavy melting steel, delivered to eastern Pennsylvania consumers, the higher quotation is nominal in the absence of new buying. A consumer in Phoenixville, Pa., recently accepting shipments of machine shop turnings, stove plates and bundled sheets, is understood to be temporarily out of the market. A New Jersey consumer of stove plate is not buying at present. As a result of flood conditions in the Harrisburg district, shipments of scrap to consumers there have been temporarily curtailed. Shipments of No. 1 cast are going forward to Phillipsburg and Somerville, N. J. Borings and turnings are quiet, with brokers buying at $13 delivered Bethlehem.

Buying prices per gross ton New York follow:

Heavy melting steel, yard	$13.00 to $13.50
Heavy melting steel, railroad or equivalent	14.00 to 14.50
Rails for rolling	15.50 to 16.00
Relaying rails, nominal	24.00 to 25.00
Steel car axles	20.00 to 20.50
Iron car axles	25.00 to 26.00
No. 1 railroad wrought	16.00 to 16.50
Forged fire	11.50 to 12.00
No. 1 yard wrought, long	14.50 to 15.00
Cast borings (steel mill)	10.50 to 11.00
Cast borings (chemical)	16.00 to 16.50
Machine shop turnings	11.00 to 11.50
Mixed borings and turnings	10.00 to 10.50
Iron and steel pipe (1 in. diam., not under 2 ft. long)	12.75 to 13.25
Stove plate	11.00 to 11.50
Locomotive grate bars	12.50 to 13.00
Malleable cast (railroad)	16.00 to 16.50
Cast iron car wheels	16.00 to 17.00
No. 1 heavy breakable cast	12.50 to 13.00

Prices which dealers in New York and Brooklyn are quoting to local foundries per gross ton follow:

No. 1 machinery cast	$17.00 to $17.50
No. 1 heavy cast (columns, building materials, etc.), cupola size	15.00 to 15.50
No. 2 cast (radiators, cast boilers, etc)	14.00 to 14.50

Cincinnati

Pig Iron Extremely Dull—Coke Market Quiet —Scrap Prices Decline

CINCINNATI, Feb. 17.—Activity in the local pig iron market was almost at a standstill during the past week. Sales were in exceedingly small quantities, while inquiries have been few, the only one of importance being that of Vogt Bros., Louisville, for 300 tons of Northern iron. Buyers apparently have filled their first quarter requirements and a considerable portion of their second quarter's needs. Companies here are making little effort to sell. Prices of Southern iron have not varied from last week's quotations. They range from $20 to $22, Birmingham, but no sales have been recorded at the latter figure. Indications are that there will be little improvement locally in the immediate future, although there is a slightly better tone to the market than there was a week ago. Northern pig iron has been exceedingly dull. Prices in the Ironton district are from $22 to $23 furnace.

Based on freight rates of $4.05 from Birmingham and $2.27 from Ironton we quote f.o.b. Cincinnati:

Southern fdy., sil. 1.75 to 2.25 (base)	$24.05 to $25.05
Southern fdy., sil. 2.25 to 2.75	24.55 to 25.55
Southern Ohio silvery, 8 per cent	32.77
Southern Ohio fdy., sil. 1.75 to 2.25	24.27 to 25.27
Southern Ohio, basic (nominal)	24.27
Southern Ohio malleable	24.27 to 25.27

Sheets.—Some second quarter contracts have been entered at the new schedule, and some orders for immediate shipment are also being booked. The trade generally is well covered, however, for its immediate needs. Prices are steady in this market, at 2.70c. for blue annealed, 3.70c. for black and 4.85c. for galvanized sheets, Pittsburgh, or equivalent.

Structural Activity.—Inquiries are scarce, the only one of importance being for 1400 tons for a building at Columbus, Ohio. There were no lettings of consequence.

Reinforcing.—Inquiries are better. The Parkview Apartments, Cincinnati, requiring 300 tons, and the Children's Hospital, Cincinnati, 350 tons, are up for bids. There were no awards over 100 tons. Prices are steady at 2c. to 2.10c., mill, for prompt shipment.

Warehouse Business.—Jobbers report a slight improvement in demand, but generally speaking orders are disappointing. Prices, however, are steady, though unchanged.

Cincinnati jobbers quote: Iron and steel bars, 3.30c.; reinforcing bars, 3.30c.; hoops, 4.35c.; bands, 3.95c.; shapes, 3.40c.; plates, 3.40c.; cold-rolled rounds, 4.05c.; cold-rolled flats, squares and hexagons, 4.55c.; open-hearth spring steel, 4.75c. to 5.75c.; No. 10 blue annealed sheets, 3.90c.; No. 28 black sheets, 4.60c.; No. 28 galvanized sheets, 5.75c.; No. 9 annealed wire, $3.25 per 100 lb.; common wire nails, $3.25 per keg base; cement coated nails, $2.65 per keg.

Finished Materials.—Demand is mostly for carload lots, and prices of bars, shapes and plates on this class of business are being held steady at the equivalent of 2.20c., Pittsburgh. It is reported that large buyers have been approached on second quarter contracts on the basis of 2.10c., Pittsburgh, but so far as reported no business has been booked for this delivery at this price. Wire products are in fair demand, and small sales are reported at the new schedule. Jobbers have been taken care of for the next 60 to 90 days, however, on the basis of 2.60c. for plain wire and $2.85 for nails. There is little activity in bolts and nuts, though prices are steady. Light rails are in demand only in small quantities. Demand is keeping up well, however, for track accessories, and prices are stiffening.

Coke.—The coke market is quiet, with little demand in evidence. Prices have not changed in the last 10 days. Shipments on contract are satisfactory and the outlook is for gradual improvement locally.

Connellsville furnace, $3.75; foundry, $4.50 to $5.50; New River foundry, $8.50; Wise County furnace, $3.75; foundry, $4.50 to $5.50; by-product foundry, $6.50 Connellsville basis.

Old Material.—Dealers are inclined to sell if they can secure their price. Some are holding on to material in their hands rather than dispose of it at present quotations. There has been little consumer buying and activity has been largely confined to trading among dealers. Prices in general are lower than they were a week ago. Railroad offerings have been good, the Louisville & Nashville having just closed a list. The Norfolk & Western, Chesapeake & Ohio and the Southern have sizable lists out at present which they are expected to close shortly.

We quote dealers' buying prices, f.o.b. cars, Cincinnati:

Per Gross Ton	
Heavy melting steel	$14.50 to $15.00
Scrap rails for melting	14.50 to 15.00
Short rails	18.50 to 19.00
Relaying rails	29.50 to 30.00
Rails for rolling	16.00 to 16.50
Old car wheels	14.00 to 14.50
No. 1 locomotive tires	17.50 to 18.00
Railroad malleable	16.50 to 17.00
Agricultural malleable	15.50 to 16.00
Loose sheet clippings	11.50 to 12.00
Champion bundled sheets	12.50 to 13.00
Per Net Ton	
Cast iron borings	11.00 to 11.50
Machine shop turnings	10.00 to 10.50
No. 1 machinery cast	18.50 to 19.00
No. 1 railroad cast	15.50 to 16.00
Iron axles	22.50 to 23.00
No. 1 railroad wrought	12.00 to 12.50
Pipes and flues	8.50 to 9.00
No. 1 busheling	11.00 to 11.50
Mixed busheling	8.50 to 9.00
Burnt cast	10.50 to 11.00
Stove plate	11.50 to 12.00
Brake shoes	12.00 to 12.50

Boston

Domestic Pig Iron Appears Firmer, but Foreign Is Cheaper

BOSTON, Feb. 17.—Domestic pig iron, although in light demand, appears firmer, offers of foreign iron at attractive prices notwithstanding. Resale Buffalo at $22 base has been practically cleaned up and $23 more nearly represents the market. The Pennsylvania $23 base iron has disappeared, $23.50 being the lowest price available today, while no Alabama at less than $21.50 furnace base is to be had. Local receipts of foreign iron the past week approximated 5000 tons. Continental, silicon 2.50 to 3.00, and higher silicon have sold at less than $23.00 on dock duty paid on sacrifice business and Dutch, silicon 2.50 to 3.00, at $23.50 and $24. Sales of foreign iron, like those of domestic, are small. Because of the slow recovery in business, a majority of foundries anticipating buying for the second quarter, find themselves amply protected. A Rhode Island melter has covered on coke malleable at $22 furnace base.

We quote delivered prices on the basis of the latest reported sales as follows, having added $3.65 freight from eastern Pennsylvania, $4.91 from Buffalo, $5.92 from Virginia and $9.60 from Alabama:

East. Penn., sil. 1.75 to 2.25	$27.15 to $27.65
East. Penn., sil. 2.25 to 2.75	27.15 to 28.15
Buffalo, sil. 1.75 to 2.25	26.91 to 27.91
Buffalo, sil. 2.25 to 2.75	26.91 to 28.41
Virginia, sil. 1.75 to 2.25	29.92
Virginia, sil. 2.25 to 2.75	30.42
Alabama, sil. 1.75 to 2.25	31.10
Alabama, sil. 2.25 to 2.75	31.60

Shapes and Plates.—While mills openly quote $2.51½ per 100 lb. delivered Boston common freight rate points for plates, or 2.15c. Pittsburgh base, and are talking $2.56½ delivered or 2.20c. Pittsburgh base for second quarter, buyers have no difficulty is securing tonnages desired at $2.36½ delivered or 2c. Pittsburgh base. The market on first quarter shapes is generally $2.46½ delivered, or 2.10c. Pittsburgh base, and on second quarter $2.56½ delivered or 2.20c. Pittsburgh base. Deferred contract tonnages have recently been closed at 2c. Pittsburgh base, or $2.36½ per 100 lb. delivered. The opinion among most local fabricators is that a considerable tonnage that has been hanging over the market for some time will be closed within the next fortnight. All bids on the Newton, Mass., high school, involving 325 tons of steel, were rejected.

Warehouse Business.—Warehouse prices on cold-rolled and galvanized sheets have been advanced 10c. per 100 lb., cold-rolled No. 28 gage now being $5.20,

and No. 28 galvanized $6.25. Blue annealed sheets are unchanged in price, No. 10 at $3.91½. Wire products, including nails, barbed wire, etc., have advanced $2 a ton.

Coke.—The slowing up in the movement of by-product foundry coke from ovens to consumers, noted earlier in the month, has been followed by a general improvement, and indications now are that producers will move a tonnage this month equal to that of January. Warmer weather has greatly curtailed the retail demand for domestic coke, consequently producers are giving better service in the matter of foundry coke shipments. Both the New England Coal & Coke Co. and the Providence Gas Co. quote by-product foundry coke at $12 a ton delivered in New England. Foundries evince practically no interest in Connellsville foundry coke.

Old Material.—The best most buyers offer on heavy melting steel today is $13 a ton on cars, whereas a week back $13.50 was paid. Scrap rails are 50c. lower at $12.50 to $13. Otherwise old material prices remain as heretofore, and the general market, for the first time in several weeks, is resisting pressure. The outside price on machine shop turnings is generally $10.50, but $10.60 was paid the past week. While $15.25 is the best offered for chemical borings, textile machinery makers have disposed of such material at $16. Offers of $18 shipping point for horseshoes have failed to be attractive to sellers. Current new business is confined to scattered car lots of miscellaneous material, usually at outside prices given below. A report that a Pittsburgh steel mill has reentered the market has helped sentiment here. Bids closed yesterday on 2100 to 2200 tons of relaying rails offered by the Boston & Maine Railroad. Bids close today on 500 tons girder rails, 150 tons special T rails, and smaller tonnages of miscellaneous material offered by the Boston Elevated Railway.

The following prices are for gross ton lots delivered consuming points:

No. 1 machinery cast	$19.50 to $20.00
No. 2 machinery cast	17.00 to 18.00
Stove plates	15.00 to 15.50
Railroad malleable	19.00 to 20.00

The following prices are offered per gross ton lots, f.o.b. Boston rate shipping points:

No. 1 heavy melting steel	$12.50 to $13.30
No. 1 railroad wrought	15.00 to 15.50
No. 1 yard wrought	14.00 to 14.50
Wrought pipe (1-in. in diam. over 2 ft. long)	12.50 to 13.00
Machine shop turnings	10.00 to 10.50
Cast iron borings, chemical	15.00 to 15.25
Cast iron borings, rolling mill	10.50 to 11.00
Blast furnace borings and turnings	9.00 to 9.50
Forge scrap	11.00 to 11.50
Bundled skeleton	11.00 to 11.50
Bundled cotton ties	8.50 to 9.00
Forged flashings	11.00 to 11.50
Shafting	19.00 to 19.50
Street car axles	19.00 to 19.50
Rails for rerolling	15.00 to 15.50
Scrap rails	12.50 to 13.00

Birmingham

Little Buying of Pig Iron—Scrap Market Develops Weakness

BIRMINGHAM, ALA., Feb. 17.—The Southern pig iron market is declared firm by furnace company executives, though the selling continues slow. Quotations show no weakness. A few sales of iron are being made for immediate and future delivery. The probable make of the first quarter, with a larger number of blast furnaces in operation, has been well covered and a start made on the second quarter of the year. Inquiries still come to light indicating that the second quarter will be as active as was the first. The quotations for pig iron in the Birmingham district continue at $21 to $22 per ton for No. 2 foundry. Surplus iron piles are being resorted to as to foundry iron. Raw material supplies are again being given attention.

We quote per gross ton, f.o.b. Birmingham district furnaces, as follows, the lower prices being for first quarter and the higher those of the largest producers for second quarter:

No. 2 foundry, 1.75 to 2.25 sil.	$21.00 to $22.00
No. 1 foundry, 2.25 to 2.75 sil.	21.50 to 22.50
Basic	20.00 to 22.00
Charcoal, warm blast	32.00

Steel.—Advances in various steel products were announced in this district as well as in other directions. No hesitation in the operations at the steel mills is noted as compared to the conditions for the past few weeks. Fabricating plants continue steady operation on old and new contracts. Birmingham fabricators are bidding on structural steel contracts in Florida where much construction is under way. Steel bars quoted at 2.35c. to 2.40c., Birmingham.

Cast Iron Pipe.—Lettings are still reported with considerable tonnage involved and specifications are being bid on, keeping the several plants producing cast iron pressure pipe active. Indications now point to an early buying movement, as usually felt in the spring. No change in quotation is announced, though there is intimation that an advance is probable for second quarter.

Coke.—Independent coke producers in the Birmingham district are enjoying more inquiries and are selling for immediate and future deliveries. Quotations advanced 50c. on the ton. Production of coke is being given every attention, both beehive and by-product. The Alabama By-Products Corporation, the largest independent coke company of this district, is anxious to have the new ovens, 25, finished at the earliest possible moment now, the Koppers company promising completion early in March. This coke company will have 100 by-product ovens then with the ultimate number placed at 300. Foundry coke is selling as high as $5.50.

Old Material.—Weakness in heavy melting steel and steel rails was noted the past week, so far as quotations are concerned, while the entire scrap iron and steel market has been in a lull for a week and longer. Much scrap is moving on old contracts. The buying is very limited. Dealers in old material are not apprehensive as to future market as long as the pig iron market retains its strength.

We quote per gross ton, f.o.b. Birmingham district yards, as follows:

Cast iron borings, chemical	$15.00 to $16.00
Heavy melting steel	15.00 to 16.00
Railroad wrought	14.00 to 15.00
Steel axles	18.00 to 19.00
Iron axles	19.00 to 20.00
Steel rails	15.00 to 16.00
No. 1 cast	17.00 to 17.50
Tramcar wheels	17.00 to 17.50
Car wheels	16.00 to 17.00
Stove plate	15.00 to 16.00
Machine shop turnings	8.00 to 9.00
Cast iron borings	8.00 to 9.00
Rails for rolling	15.50 to 16.50

Buffalo

Pig Iron Prices Decline in Keen Competition —Scrap Is Lower

BUFFALO, Feb. 17.—The inquiry for pig iron this week was light, only about 2000 tons being sought. Brokers' iron is still being offered at $22, Buffalo, and in one or two instances, a furnace has lowered its price on specific competition. This was true in the case of one 1000-ton inquiry for foundry from New England; one 500-ton inquiry and a 600-ton lot, also from New England. It is stated that this price was made to meet broker competition and is not to be construed as a price policy; on furnace competition, $23 is the base price named by this company. The Worthington 9000-ton inquiry is said to have been placed with the exception of some small lots. The Lackawanna plant of the Bethlehem Steel Co. is now operating six furnaces in place of seven, but otherwise operation remains unchanged.

We quote prices f.o.b. gross ton, Buffalo, made by furnaces as follows:

No. 2 plain, sil. 1.75 to 2.25	$22.00 to $23.00
No. 2X foundry, sil. 2.25 to 2.75	22.50 to 23.50
No. 1 foundry, sil. 2.75 to 3.25	23.50 to 24.50
Malleable, sil. up to 2.25	23.00
Basic	23.00
Lake Superior charcoal	29.28

Finished Iron and Steel.—Business is not so brisk as it was a few weeks ago, before the recent increase of $2 per ton on most steel commodities. While the higher prices are still being quoted nominally and in many individual cases obtained, some selling is still going on at a lower price. On one piece of bar business which was figured lately, a local mill is said to have quoted a price, the equivalent of which by a Pitts-

burgh seller would have been 2c. Some selling of bars has been going on at 2.415c. and 2.365c. Sheet inquiry has been fair with 3.70c. and 4.85c. being quoted by Pittsburgh sellers here. Among the recent sizable structural commitments was the First National Bank at Utica. A flood abatement work at Hornell, N. Y. will require 2000 tons of reinforcing bars, it is estimated.

Old Material.—Heavy melting steel, No. 1 busheling and hydraulic compressed sheets figured in the recent purchases of one mill here, which is reported to have bought between 10,000 and 15,000 tons of material. The heavy melting steel is believed to have been bought at $19. There is at the present time no buying by the mills and this condition is expected to prevail for three or four weeks. Scrap in dealers' yards is more than ordinarily light and the recent high prices have tended to prevent re-stocking. There has been some selling of malleable and a few sales of low phosphorus during the past week. Outside markets are very quiet. Prices have declined on a number of grades.

We quote f.o.b. gross ton, Buffalo, as follows:

Heavy melting steel	$19.00 to $19.50
Low phosphorus	21.00 to 22.00
No. 1 railroad wrought	15.50 to 16.00
Car wheels	19.00 to 20.00
Machine shop turnings	14.00 to 14.50
Cast iron borings	14.00 to 14.50
No. 1 busheling	18.00 to 18.50
Stove plate	16.00 to 16.50
Grate bars	14.00 to 14.50
Bundled sheets	13.50 to 14.00
Hydraulic compressed	18.00 to 18.50
Railroad malleable	20.00 to 20.50
No. 1 machinery cast	18.50 to 19.00
Iron axles	28.00 to 29.00
Steel axles	19.00 to 20.00

St. Louis

Melters of Pig Iron Hesitate About Buying—Old Material Weaker

ST. LOUIS, Feb. 17.—Melters in this district are showing very little interest in their pig iron requirements for second quarter. Recent offers of Northern iron at $23, Chicago, by a large Chicago company, have had the effect of causing them to be more reluctant than ever to place orders now, fearing that the market may still go lower. The melters in the district are all busy and the melt is being well maintained. The only inquiry of consequence for second quarter is 2000 tons of wheel iron for an east side concern. A machinery manufacturer bought 500 tons of foundry iron for second quarter delivery from a Chicago maker and is in the market for 500 tons additional.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices $2.16 freight from Chicago, $3.28 from Florence and Sheffield (rail and water), $5.17 from Birmingham, all rail, and 81c. average switching charge from Granite City:

Northern fdy., sil. 1.75 to 2.25	$26.66
Northern malleable, sil. 1.75 to 2.25	26.66
Basic	26.66
Southern fdy., sil. 1.75 to 2.25 (rail)	$26.67 to 27.17
Southern fdy., sil. 1.75 to 2.25 (rail and water)	24.78 to 25.28
Granite City iron, sil. 1.75 to 2.25	25.81 to 26.31

Finished Iron and Steel.—The Laclede Steel Co. got the contract for 400 tons of bars for the Doheny building in Little Rock, Ark., and 150 tons for an apartment house at Taylor and Maryland Avenues, St. Louis. The order for the Wabash rails, 5000 tons, has not yet been placed. Business in other lines is quiet and buyers are simply marking time.

For stock out of warehouse we quote: Soft steel bars, 3.15c. per lb.; iron bars, 3.15c.; structural shapes, 3.25c.; tank plates, 3.45c.; No. 10 blue annealed sheets, 3.90c.; No. 28 black sheets, cold rolled, one pass, 4.80c.; galvanized steel sheets, No. 28, 5.80c.; black corrugated sheets, 4.95c.; galvanized, 5.95c.; cold rolled rounds, shafting and screws stock, 3.95c.; structural rivets, 3.65c.; boiler rivets, 3.85c.; tank rivets, ⅞ in. diameter and smaller, 70 per cent off list; machine bolts, 55 per cent; carriage bolts, 50 per cent; lag screws, 60 per cent; hot pressed nuts, squares, $3.50; hexagons, blank or tapped, $4 off list.

Coke.—Foundry coke is in fair demand with almost all of the business being done by by-product producers in the district; only a small amount of Connellsville grades being shipped in here. Interest in domestic grades is light and concessions have failed to stimulate any buying.

Old Material.—The market for old material is quiet and some items are from 50c. to $1 a ton lower than the previous week. Consumers in the district are well booked with orders but are holding off buying of material in the hope that prices may be still further lowered. They are well supplied for the rest of the first quarter. New railroad lists issued during the week include the following: Northern Pacific, 2000 tons; Southern Railway Subsidiaries, 8000 tons; Rock Island, 3700 tons, Norfolk & Western, 8000 tons; Frisco, 1500 tons; Cotton Belt, 1500 tons.

We quote dealers' prices f.o.b. consumers' work, St. Louis industrial district and dealers' yards, as follows:

Per Gross Ton	
Iron rails	$17.50 to $18.00
Rails for rolling	20.00 to 20.50
Steel rails less than 3 ft.	20.00 to 20.50
Relaying rails, 60 lb. and under	25.00 to 26.00
Relaying rails, 70 lb. and over	32.50 to 33.50
Cast iron car wheels	20.00 to 20.50
Heavy melting steel	17.00 to 17.50
Heavy shoveling steel	17.00 to 17.50
Frogs, switches and guards cut apart	19.00 to 19.50
Railroad springs	21.50 to 22.00
Heavy axles and tire turnings	13.00 to 13.50
No. 1 locomotive tires	20.00 to 20.50
Per Net Ton	
Steel angle bars	17.00 to 17.50
Steel car axles	20.50 to 21.00
Iron car axles	24.50 to 25.00
Wrought iron bars and transoms	20.50 to 21.00
No. 1 railroad wrought	15.50 to 16.00
No. 2 railroad wrought	15.00 to 15.50
Cast iron borings	12.50 to 13.00
No. 1 busheling	15.00 to 15.50
No. 1 railroad cast	18.25 to 18.75
No. 1 machinery cast	19.00 to 19.50
Railroad malleable	16.00 to 16.50
Machine shop turnings	9.50 to 10.00
Champion bundled sheets	10.50 to 11.00

San Francisco

Volume of Current Business Small—Buyers Testing Out Prices

SAN FRANCISCO, Feb. 14 (*By Air Mail*).—Most of the business that is now being placed is small in volume, and the tendency of buyers to test out prices is more apparent than it was a week ago. Although some of the quietness of the past week may be attributed to the holiday, a good deal of it, perhaps, may be laid to the more conservative attitude of buyers. The result has been a slight softening in quotations on the part of some sellers, notably in plates, which are being quoted 2.55c. to 2.60c., c.i.f., with indications that 2.50c. is obtainable for round tonnages.

Although there is little activity in pig iron, prices are remarkably firm. The price of shapes, although subject to the usual testing out applied to other new prices, continues firmly at 2.55c. to 2.60c., c.i.f., with contracts closed during the week totaling 2210 tons.

A feature of the week was the placing of part of its order by the Hammond Lumber Co., as follows: 130 tons of shapes to two leading Eastern companies, one carload of nails and another of track spikes to two Eastern companies, 900 axles to a leading Eastern firm. There is still pending 500 tons of rails, 300 tons of merchant and reinforcing bars, 300 wheels and a quantity of miscellaneous supplies.

Pig Iron.—Buyers have covered their requirements for the most part for the entire first quarter, and in some instances well into the second. Current business is confined almost entirely to small lots. Prices are remarkably firm for both domestic and foreign irons, with few indications of softening.

	Per ton
*Utah basic	$27.25 to $28.25
*Utah foundry, sil. 1.75 to 2.25	27.50 to 28.50
**Scotch foundry	29.50 to 30.00
**English foundry	28.50 to 30.00
**Belgian foundry	26.00 to 28.00
**Indian foundry	26.00 to 28.00
**Dutch foundry	26.00 to 26.50
*Birmingham, Ala., foundry, sil. 2.75 to 3.25	31.00

*Delivered in San Francisco.
**Duty paid, f.o.b. cars, San Francisco.

Structural Shapes.—Awards during the week amounted to 2210 tons. Prices are firm at 2.55c. to 2.60c., c.i.f. There is some talk about 2.50c. being obtainable for large tonnages, but no new contracts have been closed at that figure, and the best going price at present seems to be 2.55c., and that can be had, apparently, for sizable tonnages only. The largest single award of the week, 1200 tons, was awarded in Los Angeles.

Plates.—Awards of the week amounted to 2500 tons. The Steel Tank & Pipe Co. took 1100 tons for the Portland Gas & Coke Co. pipe line, and 700 tons for 17 tanks for the Pan-American Oil Co. plant in Oakland. The Western Pipe & Steel Co. took 400 tons for 10 tanks for the Pan-American Oil Co. plant in San Francisco. The Southern Pacific has placed 300 tons, and the only new inquiry of the week was from the Southern Pacific Equipment Co. for 250 tons. Bids will close Feb. 16. Current quotations are 2.55c. to 2.60c., c.i.f., but there are indications that 2.50c. is possible for round tonnages. The Gorden Valley Water Project, Vallejo, Cal., for 22 miles of 22- or 24-in. pipe, for which bids close Feb. 18, and which was reported last week, will require about 3000 tons, instead of 1000 as originally estimated.

Cast Iron Pipe.—Contracts closed during the week call for about 5174 tons, and bids have been closed for 2500 tons additional. Prices are unchanged, the current quotation being $53 to $54, base, delivered in this district. Among the awards of the week were the following:

Los Angeles, 4 and 6 in., Class B, 5300 tons, to United States Cast Iron Pipe & Foundry Co.

San Diego, 4 and 6 in., Class C, 170 tons to National Cast Iron Pipe Co.

Bellingham, Wash., 24 in., Class C, 704 tons, to United States Cast Iron Pipe & Foundry Co.

Portland, Ore., 4, 8, 12, 16 and 24 in., Class B, 2500 tons, United States Cast Iron Pipe & Foundry Co., low bidder.

Bars.—No awards of any size were made in reinforcing bars during the past week. Several good size jobs are pending, however, and prices are holding firm at 3.35c., base, carload, and 3.80c., base, l.c.l. Soft steel bars are steady at 2.55c. to 2.60c., base, and soft steel bands are 3.30c. to 3.35c., base. The past week was unusually quiet.

Warehouse Business.—Buying interest is confined principally to small lots. The individual item that is more active than others is plates, some jobbers enjoying fairly large sales. Prices are unchanged, and consistently firm. Current warehouse quotations are:

Merchant bars, 3.15 base, per 100 lb.; soft steel bands, $4 base per 100 lb.; angles, ⅞ in. and larger x 1½ in. to 2¾ in., inc., $3.15 base, per 100 lb.; channels and tees, ¾ in. to 2¾ in., inc., $3.75 base, per 100 lb.; angles, beams and channels, 3 in. and larger, $3.15 base, per 100 lb.; tees, 3 in. and larger, $3.35 base, per 100 lb.; universal mill plates, ¼ in. and heavier, stock lengths, $3.15 base, per 100 lb.; spring steel, ¼ in. and thicker, $6.15 base, per 100 lb.; No. 10 blue annealed sheets, $4.20 base, per 100 lb.; No. 28 black sheets, $5.25 base, per 100 lb.; No. 28 galvanized sheets, $6.25 base, per 100 lb.; No. 28 galvanized corrugated sheets, $6.30 base, per 100 lb.

Ferroalloys.—Interest is irregular, and prices generally nominal. It is virtually impossible, at present, to obtain Swedish ferrosilicon. Eastern electro ferrosilicon, 50 per cent, is quoted $100 in carload lots at incoming dock here. English ferromanganese, 80 per cent, is quoted at $117.50, duty paid, incoming dock.

Cleveland

Ford Motor Co. Contracts for 12,000 Tons of Steel for Open-Hearth Plant

CLEVELAND, Feb. 17.—While there is some demand for steel bars, plates and structural material in small lots and a few contracts are being placed for the second quarter, the market does not show a great deal of life. Some of the larger consumers are not yet ready to make commitments for the second quarter. Specifications on contracts are good. With some of the mills holding to the recent price advances, the market appears firmer than a week ago. This is particularly true of plates, on which an Ohio mill has made a $2 a ton advance to 2.10c., which now appears to be the minimum as well as the common price.

Although small lot sales are being made at 2.20c., steel bars can still be bought at 2.10c. for round lots for early specifications and through the second quarter, but some of the mills are holding to 2.20c., which is the going price for small lots. The sheet and strip steel market is dragging due to the very cautious buying and limited consumption by the automotive industry. The outstanding award in the structural field is the placing of 12,000 tons of steel for the open-hearth plant of the Ford Motor Co. Structural inquiry is light, but a fair volume of work is in prospect. Lake shipyards are figuring on one large boat. Inquiries are pending for 13 locomotives for the Chicago, Burlington & Quincy and 10 for the Rock Island Railroad.

Pig Iron.—The market has been very dull the present week both in actual orders and inquiries. Foundries are fairly busy, but are not booked up with orders very far ahead and are not ready to buy pig iron for the second quarter and the present weakness of the market offers them no encouragement to buy. However, a brighter side of the situation is found in the fact that furnaces operated by Cleveland interests are still shipping more iron than they are making and that very little iron bought for the first quarter will be carried over into the next quarter. Brokers in the Valley district are active in attempting to move foundry iron at $22 and are trying to find a market as far west as Indiana. The difference in the $22 price, as compared with the $23 price quoted by Lake furnaces, about equals the freight disadvantage for shipment from the Valley district to Indiana points. Cleveland furnaces are holding nominally to $23 for foundry and malleable iron, but this market is untested, and this quotation would probably be shaded on a definite inquiry. For Cleveland delivery $23.50 at furnace is still being asked, but makers would probably make a concession of at least 25c. a ton to shut out Valley iron. Southern foundry iron is quoted at $20 for the first quarter and $20.50 to $21 for the second quarter.

Quotations below, except on basic and low phosphorus iron, are delivered Cleveland, and for local iron include a 50c. switching charge. Ohio silvery and Southern iron prices are based on a $3.02 freight rate from Jackson and $6 rate from Birmingham:

Basic, Valley furnace	$22.00
N'th'n No. 2 fdy., sil. 1.75 to 2.25	23.75 to 24.00
Southern fdy., sil. 1.75 to 2.25	26.01 to 27.01
Malleable	23.75 to 24.00
Ohio silvery, 8 per cent	33.52
Standard low phos., Valley furnace	29.00

Iron Ore.—The Ford Motor Co. has sent out an inquiry for 160,000 tons of Lake Superior ore in various grades for this year's delivery. The Ford inquiry, as it did last year, will probably bring out the prices for the year, but it may be several weeks before prices are named. A year ago, the Ford inquiry was for 250,000 tons.

Semi-Finished Steel.—The market is inactive, as consumers are not ready to buy for the second quarter and with the curtailment of sheet mill operations shipments of sheet bars on contract are not as heavy as they were. While the market lacks firmness, asking prices are unchanged at $39 Cleveland and Youngstown for sheet bars and $37.50 Youngstown for large billets and slabs.

Steel Bars, Plates and Structural Material.—Steel bars and plates range from 2.10c. to 2.20c., Pittsburgh. Structural material is quoted at 2.20c., Pittsburgh, but this price is untested.

Jobbers quote steel bars, 3.10c.; plates and structural shapes, 3.20c.; No. 28 black sheets, 4.35c.; No. 28 galvanized sheets, 5.45c.; No. 10 blue annealed sheets, 3.45c. to 3.60c.; cold-rolled rounds, 4c.; flats, squares and hexagons, 4.50c.; hoops and bands, 1 in. and wider and 20 gage and heavier, 3.85c.; narrower than 1 in., all gages, 4.85c.; No. 9 annealed wire, $3.25 per 100 lb.; No. 9 galvanized wire, $3.70 per 100 lb.; common wire nails, $3.35 base per 100 lb.

Bolts, Nuts and Rivets.—Specifications for bolts and nuts are fair, although not as heavy as a few weeks

ago and there is little new buying. Prices are firm. Rivets are quiet, but firm. Leading makers have revised discounts on cap and set screws, making the present prices slightly higher than the extreme discounts that have been appearing.

Sheets.—The market continues dull and all business that is being placed is evidently being taken at the old prices. Consumers are showing no interest in covering for the second quarter. Some mills are still operating at capacity and others have curtailed. In some cases, consumers are able to place orders on a mill instead of Pittsburgh base. More common quotations are 3.50c. to 3.60c. for black, 2.70c. for blue annealed and 4.75c. for galvanized sheets. Efforts to get above 4.60c. for auto body sheets have proved unsuccessful and one producer has withdrawn its 4.75c. price and gone back to 4.60c.

Reinforcing Bars.—The market on rail steel bars is slightly firmer with 2c. the common quotation. Large tonnages will be required in road building work in Ohio, New York and Pennsylvania this year. New inquiries include 100 tons for the Central Police Station, Cleveland, and 125 tons for Science Hall for Kenyon College, Gambier, Ohio.

Warehouse Business.—Jobbers announced that they have no intention of advancing, for the present at least, warehouse prices to correspond with the advance in mill prices.

Coke.—The market is extremely dull, with prices unchanged at from $5 to $5.75 for standard Connellsville foundry coke.

Old Material.—Prices have further declined $1.50 a ton on heavy melting steel and 50c. or more a ton on other grades. The weakness of the local market is partly due to suspension of shipments during the week by one Cleveland steel plant, making it necessary to find outside markets for material. Heavy melting steel is being offered locally at $17.50 and in the Valley district is quoted at $19. There is virtually no buying by mills and little trading between dealers who are not trying to force scrap on the market at the present prices.

We quote dealers' prices f.o.b. Cleveland per gross ton:

Heavy melting steel	$17.50 to $17.60
Rails for rolling	19.00 to 19.25
Rails under 3 ft.	20.00 to 20.50
Low phosphorus melting	19.75 to 20.00
Cast iron borings	15.00 to 15.25
Machine shop turnings	15.00 to 15.25
Mixed borings and short turnings	15.00 to 15.25
Compressed sheet steel	15.00 to 15.25
Railroad wrought	15.25 to 15.50
Railroad malleable	20.50 to 21.00
Light bundled sheet stampings	12.50 to 12.75
Steel axle turnings	16.00 to 16.25
No. 1 cast	19.00 to 19.50
No. 1 busheling	14.75 to 15.00
Drop forge flashings	12.75 to 13.00
Railroad grate bars	15.25 to 15.50
Stove plate	15.25 to 15.50
Pipes and flues	11.00 to 11.25

National Tube Co. Purchase Helps Scrap Market at Detroit

DETROIT, Feb. 17.—General weakness in the market on old materials has been notable in the past two weeks, the stabilizing factor being injected by the purchase by the National Tube Co. at Lorain, Ohio, of 10,000 tons of heavy melting steel from a well known brokerage firm on a basis of $16 to $16.50, Detroit. The general feeling at this time is one of expectancy based on general manufacturing conditions for the period just ahead and March production schedules promise to establish the firmness of the market. Automobile manufacturers are still holding their schedules within close range of actual sales, but it is expected that March and April will be the heavy producing months. The following prices have maintained for the past two weeks:

Heavy melting and shoveling steel	$16.00 to $16.50
Borings and short turnings	13.00 to 13.50
Long turnings	12.75 to 13.50
No. 1 machinery cast	18.50 to 19.00
Automobile cast	21.50 to 22.50
Hydraulic compressed	14.25 to 15.00
Stove plate	16.50 to 17.50
No. 1 busheling	14.00 to 14.50
Sheet clippings	12.00 to 13.00

Philadelphia

Large Plate Tonnage Awarded—Pig Iron Bought for Third Quarter—Scrap Weak

PHILADELPHIA, Feb. 17.—Specifications against contracts are evidently not as numerous as during January, but new business, confined for the most part to small lots, continues at about the same rate. The outstanding purchase of finished material during the week was 10,000 tons of plates by the Pennsylvania Railroad. Inquiries have appeared from a shipping company and a railroad for two freight and passenger ships and two car floats. Plate, shape and bar prices, while fairly firm on the general run of business not calling for highly desirable tonnages, show evidence of slight weakness on the more satisfactory inquiries.

The pig iron market, despite an almost total lack of any but small lots of a few carloads for prompt shipment, is holding fairly well to $23.50 to $24 base, furnace. About 3500 tons of foundry awarded for third quarter delivery and 3500 tons pending are the features of the market. It is estimated that imports over the closing weeks of last year to date have been close to 100,000 tons of iron. While competition of the foreign product has not been so widely distributed in eastern Pennsylvania as in the New England district, several sizable tonnages have passed through the Port of Philadelphia recently. Action of two eastern Pennsylvania sellers of pig iron in complaining to the Federal Government over alleged infraction of the anti-dumping act, has resulted in Government inquiry by cable, as reported last week and may be followed by formal investigation.

Transactions in old material between consumers and brokers are practically non-existent. All grades of scrap continue weak with the market stirred only by dealer and broker transactions.

Pig Iron.—A feature of the past week was the purchase of 3500 tons of No. 2 plain and No. 2X, part of a 5000 ton inquiry by a Newark stove and boiler maker. The tonnage, which is understood to have gone on a basis of $23.50, eastern Pennsylvania furnace, was for third quarter delivery with the understanding that as much as possible would be accepted in the latter part of the second quarter. An inquiry from an eastern Pennsylvania consumer for 3500 tons of foundry is still pending. Offers of parts of this tonnage to eastern Pennsylvania furnaces at $23, base, are understood to have been refused by sellers. Carload lots of foundry for prompt shipment are still bringing $24 base from most producers. Basic is quiet and with no sales reported the present quotation is of necessity nominal. Despite the competition of foreign low phosphorus iron, this grade is holding fairly firm. A wire rope and cable manufacturer in New Jersey has been receiving shipments of foreign low phosphorus iron and in the past week took several thousand tons through the Port of Philadelphia.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rates varying from 76c. to $1.63 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	$24.26 to $25.13
East. Pa. No. 2X, 2.25 to 2.75 sil.	25.01 to 25.88
East. Pa. No. 1X	26.01 to 26.88
Virginia No. 2 plain, 1.75 to 2.25 sil.	29.17 to 29.67
Virginia, No. 2X, 2.25 to 2.75 sil.	29.67 to 30.17
Basic delivered eastern Pa.	23.75 to 24.25
Gray forge	23.50 to 24.50
Malleable	24.50 to 25.00
Standard low phos. (f.o.b. furnace)	25.50 to 26.00
Copper bearing low phos. (f.o.b. furnace)	25.50 to 26.00

Billets.—Few transactions are reported but the market continues fairly firm at $37.50 to $38 per ton, Pittsburgh, for rerolling quality, and $42.50 to $43 per ton, Pittsburgh, for forging billets.

Bars.—Mills are working on a better backlog of bars than of either shapes or plates, and quotations

are held firmly to 2.10c. to 2.20c. per lb., Pittsburgh, for current delivery, with 2.20c. per lb. quoted on second quarter business. Absence of consumer interest in second quarter contracts leaves 2.20c. per lb. largely the quoting price of makers.

Shapes.—Although 2.10c. per lb., Pittsburgh, is the current quotation for shapes, demand of fabricators not covered with lower priced contracts at 1.90c. and less, for protection at prices that will compete with the more fortunately situated companies, tends to hold the market down to as low as 2c. per lb. in some instances. While 2.20c. and 2.30c. per lb. are spoken of in connection with current business, such prices are applied to the small lots for prompt shipment that in a more active market might go to the warehouses.

Plates.—The outstanding feature of the plate market is the award by the Pennsylvania Railroad of about 10,000 tons of plates for March-April-May delivery, distributed about equally among three mills, two in eastern Pennsylvania and one in the Pittsburgh district. Prices on this tonnage are understood to have ranged from 2c. for the nearer delivery to 2.05c. for the more remote. Inquiries are in the market from the Merchants & Miners Transport Co. for two freight and passenger ships of about 8000 tons and the Delaware, Lackawanna & Western for two car floats.

Ferromanganese.—With consumers well covered for the present quarter and partly into the second quarter, unless increased operations extend their requirements, business is largely confined to purchases of lots of less than 100 tons. Quotations continue at $115 per ton, seaboard or domestic furnace.

Old Material.—Further withdrawal of consumers from the market has left the scrap market almost devoid of new business. Today transactions between brokers and dealers are to a great extent setting the market price on all grades of scrap. Heavy melting steel ranges from $17.50 to $18.50 per ton, the latter price based on a small purchase last week by an eastern Pennsylvania consumer. A user of turnings, stove plate and bundled sheets, who provided a market recently, has temporarily withdrawn from the market, and a Harrisburg consumer suffering from flood conditions has postponed deliveries. Quotations on stove plate, railroad grate bars and cast borings can be considered only nominal.

We quote for delivery at consuming points in this district as follows:

No. 1 heavy melting steel	$17.50 to $18.50
Scrap rails	17.50 to 18.50
Steel rails for rolling	18.50 to 19.00
No. 1 low phos. heavy 0.04 and under	22.50 to 23.50
Couplers and knuckles	21.50 to 22.50
Rolled steel wheels	21.50 to 22.00
Cast-iron car wheels	19.50 to 20.00
No. 1 railroad wrought	20.00 to 20.50
No. 1 yard wrought	18.00 to 18.50
No. 1 forge fire	15.00 to 15.50
Bundled sheets (for steel works)	14.50 to 15.00
Mixed borings and turnings (for blast furnace use)	13.00 to 13.50
Machine shop turnings (for steel works use)	14.50 to 15.00
Machine shop turnings (for rolling mill use)	15.00 to 15.50
Heavy axle turnings (or equivalent)	16.50 to 17.00
Cast borings (for steel works and rolling mill)	14.00 to 14.50
Cast borings (for chemical plants)	19.00 to 19.50
No. 1 cast	19.00 to 19.50
Heavy breakable cast (for steel plants)	16.50 to 17.00
Railroad grate bars	15.00 to 15.50
Stove plate (for steel plant use)	15.00 to 15.50
Wrought iron and soft steel pipes and tubes (new specifications)	16.50 to 17.00
Shafting	23.00 to 24.00
Steel axles	23.00 to 24.00

Imports.—In the week ended Feb. 14, 4023 tons of pig iron came into the Port of Philadelphia; 3023 tons from India and 1000 tons from Holland. Iron ore imports totaled 7846 tons from Spain. There were 774 tons of blooms from France and 100 tons of ferromanganese; 50 tons from the United Kingdom and 50 tons from Holland.

New Card of Extras for Hot-Rolled Strip Steel

(Changes were explained in THE IRON AGE of Feb. 5, page 416)

Ga. No.	Decimal	WIDTH																				Slitting	Pickling		Decimal	Ga. No.
		3/8	1/4	1/2	9/16	5/8 to 11/16	3/4 to 13/16	7/8 to 15/16	1 to 1 3/8	1 1/8 to 2	2 1/8 to 2 1/2	2 5/8 to 3	3 1/8 to 3 1/2	3 5/8 to 4	4 1/8 to 5	5 1/8 to 6	6 1/8 to 8	8 1/8 to 10	10 1/8 to 12 1/2	12 1/8 to 15	15 1/8 to 20	1 1/2" and Wider	Under 1 1/2"	1 1/2" and Wider		
1/4"	.187																								.187	1/4"
7	.180	1.20	.90	.70	.55	.40	.25	.15	.10	.05	Base	Base	Base	Base	Base	Base	Base	Base	.05	.10	.15	.25	.55	.40	.180	7
8	.165																								.165	8
9	.148																								.148	9
10	.134																								.134	10
1/8"	.125	1.30	1.00	.75	.60	.45	.30	.20	.15	.10	.05	.05	.05	.05	.05	.05	.05	.05	.10	.20	.30	.25	.55	.40	.125	1/8"
11	.120																								.120	11
12	.109	1.40	1.10	.85	.65	.50	.35	.25	.20	.15	.10	.10	.10	.10	.10	.10	.10	.10	.20	.30	.40	.25	.55	.40	.109	12
13	.095	1.50	1.20	.90	.70	.55	.40	.30	.25	.20	.15	.15	.15	.15	.15	.20	.20	.30	.40	.50	.60	.25	.60	.45	.095	13
14	.083	1.70	1.30	1.00	.75	.60	.45	.35	.25	.20	.15	.15	.15	.15	.20	.30	.30	.40	.60	.70	.80	.25	.65	.50	.083	14
15	.072	1.90	1.40	1.10	.80	.65	.50	.40	.25	.20	.15	.15	.20	.20	.30	.40	.50	.65	.85	.95	1.05	.40	.70	.55	.072	15
16	.065	2.10	1.60	1.20	.90	.70	.55	.45	.30	.25	.20	.20	.30	.30	.40	.55	.70	.85	1.00	1.15	....	.40	.75	.60	.065	16
17	.058	2.30	1.80	1.40	1.00	.80	.60	.50	.30	.25	.25	.25	.40	.55	.70	.85	1.00	1.25	....	....	....	.40	.80	.65	.058	17
18	.049	2.60	2.00	1.60	1.20	.90	.70	.55	.40	.35	.35	.35	.55	.70	.85	1.05	1.20	1.45	....	....	....	.55	.85	.70	.049	18
19	.042	....	2.40	1.80	1.40	1.10	.80	.60	.50	.45	.50	.55	.65	.85	1.05	1.25	1.45	....	....	....	....	.55	.90	.75	.042	19
20	.035	....	....	2.00	1.60	1.30	1.00	.70	.60	.60	.70	.80	.90	1.15	1.40	....	....	....	....	....	....	.55	.95	.80	.035	20
21	.032	....	....	2.40	2.00	1.60	1.20	.90	.80	.85	1.10	....	....	....	....	....	....	....	....	....	....	....	....	....	.032	21
22	.028	....	....	2.90	2.40	2.00	1.50	1.20	1.10	1.25	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.028	22
23	.025	....	....	....	2.80	2.40	1.90	1.50	1.30	1.50	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.025	23

FOR INTERMEDIATE GAGES THE EXTRA FOR THE NEXT LIGHTER GAGE WILL BE CHARGED

Annealing, 40c per 100 lb.

QUANTITY EXTRAS

Less than 2000 lb. but not less than 1000 lb. of one size ..... 25c per 100 lb.
Less than 1000 lb. of one size ..... 50c per 100 lb.

CUTTING EXTRAS

	2000 lb. or More	Under 2000 lb. to 1500 lb.	Under 1500 lb. to 1000 lb.	Under 1000 lb. to 500 lb.	Under 500 lb.
Cutting to lengths of 60 in. and over with pieces	No charge	.10	.20	.40	.60
Cutting to lengths over 48 in. to 59 in. inclusive	.10	.20	.30	.50	.70
Cutting to lengths over 24 in. to 48 in. inclusive	.15	.25	.35	.55	.75
Cutting to lengths over 12 in. to 24 in. inclusive	.30	.40	.50	.70	.90
Cutting to lengths over 60 in. without end pieces	10% extra per 100 lb.				

Subject to change without notice.

Feb. 5, 1925.

NON-FERROUS METALS

The Week's Prices

Cents per Pound for Early Delivery

	Copper, New York		Straits Tin (Spot)	Lead		Zinc	
Feb.	Lake	Electrolytic*	New York	New York	St. Louis	New York	St. Louis
11.....	15.00	14.50	57.37½	9.50	9.25	7.80	7.45
13.....	15.00	14.50	57.75	9.50	9.25	7.85	7.50
14.....	15.00	14.62½	....	9.50	9.25	7.90	7.55
16.....	15.00	14.62½	57.45	9.40	9.15	7.95	7.60
17.....	15.00	14.50	57.12½	9.40	9.12½	7.90	7.55

*Refinery quotation; delivered price ¼c. higher.

New York

NEW YORK, Feb. 17.

Absence of activity characterizes all the markets and it is quite pronounced in one or two, with prices tending downward. The holiday Thursday intensified this. Another reaction has started in copper and the market is weak. The tin market is quiet and without much change in values. Lead is again lower with demand fairly good. The strongest of all the markets is zinc, which is quiet but firm.

Copper.—The strength which was noted last week in the electrolytic copper market has suddenly abated and there is almost an entire absence of domestic buying, particularly yesterday and today. While most large producers are attempting to hold the market close to 15c., delivered, the metal is available today as low as 14.75c., delivered, but the volume of buying is insufficient to fairly test the situation. There is very little demand for export, also, but dealers in that market are bidding below the present quotations and experiencing some difficulty in doing any business. The situation abroad is pointed to by some as being a factor in the tendency to weakness in this and other markets, as prices in London are lower. For the time being the entire situation here is exceedingly quiet. Consumers have covered themselves fully for the first quarter and some of them pretty well into the second quarter. Sales last week were estimated at close to 10,000,000 lb. Lake copper is quoted at 15c., delivered.

Tin.—The market has been quiet and dull, with the holiday tending to lessen activity. Consumers continue to show but little interest, which, when at all manifested, is concerned with May and June deliveries. They seem to have no need for March and April metal, which is taken to indicate that they are well covered for at least two or three months. On Saturday, Feb. 14, a lack of sellers developed which resulted in a stronger tone. Dealers also manifested a desire to buy. Yesterday, however, a falling off in demand in Europe had an unfavorable influence here, so that the market became weaker. Sales of 100 to 150 tons were made at prices ranging from 57.50c. down to 57.37½c. The market today has been stagnant with spot Straits tin quoted at 57.12½c., New York. Arrivals thus far this month have been 2655 tons, with 8105 tons reported afloat.

Lead.—On Friday, Feb. 13, the leading interest again changed its contract price from 9.75c. to 9.50c., New York. Independent sellers had already reached that level and are now cutting this quotation 5 to 10 points, so that the business being done is on a basis of 9.15c., St. Louis, and 9.40c., New York. There is a better inquiry, especially for prompt shipment. Consumption continues heavy.

Late today another reduction by the leading interest was made, putting the quotation at 9.25c., New York.

Zinc.—The market for prime Western zinc continues to be largely affected by London prices which, in contrast to some of the other metals, have been fairly strong in the last week. The quotation rose to 7.60c., after falling under 7.50c., St. Louis, but today is again a little lower, due to weakness across the water. Consuming demand is light, but it can be satisfied at about 7.55c., St. Louis, or 7.90c., New York.

Nickel.—Wholesale lots of shot and ingot nickel are quoted at 31c. to 32c. per lb., with electrolytic nickel quoted at 38c.

Antimony.—Spot delivery of Chinese metal is exceedingly scarce and is bringing as high as 21.50c. to 22c. per lb., New York, duty paid, but future delivery is available at from 14c. up, depending on the position.

Aluminum.—Virgin metal, 98 to 99 per cent pure, is quoted at 27c. to 28c. per lb., delivered.

Old Metals.—The market is difficult to reflect because of the constant shifting up and down of prices of ingot metals. There will be a few days of activity followed by a dull period and this continual changing back and forth disconcerts buyers. Dealers' selling prices are as follows in cents per lb.:

Copper, heavy and crucible	14.25
Copper, heavy and wire	13.50
Copper, light and bottoms	11.50
Heavy machine composition	10.75
Brass, heavy	9.00
Brass, light	7.75
No. 1 red brass or composition turnings	10.00
No. 1 yellow rod brass turnings	9.50
Lead, heavy	8.00
Lead, tea	7.00
Zinc	4.75
Cast aluminum	19.00
Sheet aluminum	19.00

Chicago

FEB. 17.—Copper, lead and zinc have declined, while tin and antimony have advanced. The market is essentially quiet. Although considerable metal is being bought for close-by delivery, very little is being purchased for future shipment at fixed prices. Old metal prices remain unchanged. We quote, in carload lots: Lake copper, 15c.; tin, 58.50c.; lead, 9.20c.; zinc, 7.65c.; in less than carload lots, antimony, 21c. On old metals we quote copper wire, crucible shapes and copper clips, 12c.; copper bottoms, 10c.; red brass, 9c.; yellow brass, 8c.; lead pipe, 8.25c.; zinc, 4.50c.; pewter, No. 1, 30c.; tin foil, 42c.; block tin, 50c.; all buying prices for less than carload lots.

BELGIAN STEEL PRODUCTION

Pig Iron and Ingots Turned Out in December and in the Year 1924

BRUSSELS, BELGIUM, Feb. 6.—In December Belgian production was: Pig iron, 246,510 tons, as against 216,630 tons in November. Steel ingots, 238,750 tons, against 210,350 tons in November. Castings, first fusion, 6260 tons, as against 6720 tons in November. Finished steels, 207,190 tons, against 181,630 tons. Finished irons, 16,610 tons, against 16,170 tons.

Output of Calendar Year 1924

For the year 1924 production was: Pig iron, 2,808,000 tons (234,000 tons monthly average, against 182,344 tons in 1923 and 207,058 tons in 1913). Steel ingots, 2,779,470 tons (231,600 tons monthly average, as against 184,720 tons in 1923 and 200,398 tons in 1913). Castings, first fusion, 81,070 tons (monthly average, 6750 tons, as against 5771 tons in 1923 and 4154 tons in 1913). Finished steels, 2,378,600 tons (monthly average 198,200 tons, as against 161,115 tons in 1923 and 134,922 tons in 1913). Finished irons, 200,740 tons, a monthly average of 16,700 tons, as against 17,311 tons in 1923 and 25,367 tons in 1913.

The 25-42-in. 3-high universal plate mill for the Gary Tube Co., National Tube Co. subsidiary at Gary, Ind., will be built by the Mackintosh-Hemphill Co., Pittsburgh, which supplied a similar mill for the company's National Works at McKeesport, Pa. The mill for Gary is to be delivered during the summer. It is to be electrically driven by a 4500-hp. direct current motor, with flywheel motor generator set and liquid slip regulator, to be furnished by the Allis-Chalmers Mfg. Co.

Prices of Finished Iron and Steel Products (Carload Lots)

Tank Plates

F.o.b. Pittsburgh mill, base, per lb.....2c. to 2.20c.
F.o.b. Chicago, base, per lb.....2.30c.

Structural Shapes

F.o.b. Pittsburgh mills, base, per lb.....2.10c. to 2.20c.
F.o.b. Chicago, base, per lb.....2.30c.

Iron and Steel Bars

Soft steel bars f.o.b. P'gh mills, base, per lb....2.10c. to 2.20c.
Soft steel bars f.o.b. Chicago, base, per lb.....2.20c.
Reinforcing steel bars f.o.b. P'gh mills, base, per lb. 2.10c. to 2.20c.
Rail steel bars, f.o.b. Chicago district mills, base, per lb. 2.10c.
Common iron bars, f.o.b. Chicago, base, per lb.....2c.
Refined iron bars, f.o.b. P'gh mills, base, per lb..3.00c. to 3.10c.
Common iron bars, eastern Pa. mill, base, per lb.....2.10c.

Hot-Rolled Flats

(Pittsburgh)

Hoops, base, per lb.....2.50c.
Bands, base, per lb.....2.40c. to 2.50c.
Strips .....2.50c.

Cold-Finished Steel

Screw stock and shafting, f.o.b. P'gh mills, base, per lb..2.80c.
Screw stock and shafting, f.o.b. Chicago, base, per lb....2.80c.
Screw stock, base, per lb., Cleveland.....2.75c. to 2.85c.
Shafting, ground, f.o.b. mill, base, per lb.....3.20c.
Strips, f.o.b. P'gh mills, base, per lb.....4.00c. to 4.15c.
Strips, f.o.b. Cleveland mills, base, per lb.....4c. to 4.15c.
Strips, f.o.b. Chicago mills, base, per lb.....4.45c.
Strips, f.o.b. Worcester mills, base, per lb.....4.30c.

Wire Products

(To jobbers in car lots f.o.b. Pittsburgh and Cleveland)

Nails, base, per keg.....$2.85 to $2.95
Galvanized nails, 1-in. and longer, base plus.... 2.25
Galvanized nails, shorter than 1-in., base plus... 2.50
Bright plain wire, base, No. 9 gage, per 100 lb.. 2.60 to 2.70
Annealed fence wire, base, per 100 lb..... 2.75 to 2.85
Galvanized wire, No. 9, base, per 100 lb..... 3.20 to 3.30
Galvanized barbed, base, per 100 lb..... 3.55 to 3.65
Galvanized staples, base, per keg..... 3.55 to 3.65
Painted barbed wire, base, per 100 lb..... 3.30 to 3.40
Polished staples, base, per keg..... 3.30 to 3.40
Cement coated nails, base, per count keg..... 2.15 to 2.25
*Bale ties, carloads to jobbers....75, 15 and 5 per cent off list
*Bale ties, carloads to retailers...75, 10 and 6 per cent off list
Woven wire fence, base, per net ton to retailers.....$67.00

Chicago district mill prices are $2 per ton above the foregoing and Chicago delivered prices are $3 per ton above the prices f.o.b. Cleveland and Pittsburgh. Birmingham mill prices $3 a ton higher; Worcester, Mass., mills $3 a ton higher on production of that plant, and Duluth, Minn., mills $2 a ton higher; Anderson, Ind., $1 higher.

*F.o.b. Cleveland.

Sheets

Blue Annealed
(base) per lb.

Nos. 9 and 10, f.o.b. Pittsburgh dist. mill.....2.70c. to 2.80c.
Nos. 9 and 10 (base) per lb., f.o.b. Chicago dist. mills..2.80c.

Box Annealed, One Pass Cold Rolled

No. 28 (base) per lb., f.o.b. Pittsburgh dist. mill.3.50c. to 3.70c.
No. 28 (base) per lb., f.o.b. Chicago dist. mill..3.70c. to 3.80c.

Galvanized

No. 28 (base) per lb., f.o.b. Pittsburgh dist. mill.4.75c. to 4.85c.
No. 28 (base) per lb., f.o.b. Chicago dist. mill...4.85c. to 4.95c.

Tin-Mill Black Plate

No. 28 (base) per lb., f.o.b. Pittsburgh dist. mill.3.50c. to 3.70c.
No. 28 (base) per lb., f.o.b. Chicago dist. mill.....3.70c.

Automobile Body Sheets

No. 22 (base) per lb., f.o.b. mill.....4.60c.

Long Ternes

No. 28 (base) 8-lb. coating, per lb., f.o.b. mill.....4.90c.

Tine Plate

Standard cokes, per base box f.o.b. Pittsburgh district mills $5.50
Standard cokes, per base box f.o.b. Chicago district mills 5.60
Standard cokes, per base box f.o.b. Elwood, Ind..... 5.60

Terne Plate

(F.o.b. Morgantown or Pittsburgh)
(Per Package, 20 x 28 in.)

8-lb. coating, 100 lb. base	$11.20	20-lb. coating I. C.	$15.50
8-lb. coating I. C.	11.50	25-lb. coating I. C.	17.00
15-lb. coating I. C.	14.35	30-lb. coating I. C.	18.35
		40-lb. coating I. C.	20.35

Rivets

Large, f.o.b. P'gh and Cleveland mills, base, per 100 lb..$2.60
Large, f.o.b. Chicago, base, per 100 lb..... 2.75
Small, f.o.b. P'gh and Cleveland mills 70, 10 and 5 per cent off list
Small (freight allowed within zone limits) 70 and 10 to 70 off list

Rails and Track Equipment

(F.o.b. mill)

Rails, standard, per gross ton.....$43.00
Rails, light, billet, base, per lb.....1.80c. to 1.90c.
Rails, light rail steel, base, per lb.....1.65c. to 1.75c.
Spikes, 5/16 in. and larger, base, per 100 lb.....$2.90 to $3.20
Spikes, 1/2 in. and smaller, base, per 100 lb..... 3.10 to 3.50
Spikes, boat and barge, base, per 100 lb..... 3.25
Track bolts, all sizes, base, per 100 lb..... 3.90 to 4.25
Tie plates, per 100 lb. ..... 2.35 to 2.50
Angle bars, base, per 100 lb..... 2.75

Welded Pipe

(F.o.b. Pittsburgh district mills)

Butt Weld

Steel Inches	Black	Galv.	Iron Inches	Black	Galv.
1/8	45	19 1/2	1/4 to 3/8	+11	+39
1/4 to 3/8	51	25 1/2	1/2	22	2
1/2	56	42 1/2	3/4	28	11
3/4	60	48 1/2	1 to 1 1/2	30	13
1 to 2	62	50 1/2			

Lap Weld

2	55	43 1/2	2	23	7
2 1/2 to 6	59	47 1/2	2 1/2	26	11
7 and 8	56	43 1/2	3 to 6	28	13
9 and 10	54	41 1/2	7 to 12	26	11
11 and 12	53	40 1/2			

Butt Weld, extra strong, plain ends

1/8	41	24 1/2	2 to 3	61	50 1/2
1/4 to 3/8	47	30 1/2	1/4 to 3/8	+11	+54
1/2	53	42 1/2	1/2	21	7
3/4	58	47 1/2	3/4	28	12
1 to 1 1/2	60	49 1/2	1 to 1 1/2	30	14

Lap Weld, extra strong, plain ends

2	53	42 1/2	2	23	9
2 1/2 to 4	57	46 1/2	2 1/2 to 4	29	15
4 1/2 to 6	56	45 1/2	4 1/2 to 6	28	14
7 to 8	52	39 1/2	7 to 8	21	7
9 and 10	45	32 1/2	9 to 12	16	2
11 and 12	44	31 1/2			

To the large jobbing trade the above discounts are increased (on black) by one point, with supplementary discount of 5 per cent and (on galvanized) by 1 1/2 points, with supplementary discount of 5 per cent.

NOTE—The above discounts on steel pipe also apply at Lorain and Youngstown, Ohio, and Wheeling, W. Va. Chicago district mills have a base 2 points less. Chicago delivered base 2 1/2 points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point having the lowest rate to destination.

Boiler Tubes

(F.o.b. Pittsburgh)

Lap Welded Steel		*Charcoal Iron*	
2 to 2 1/4 in.	27	1 1/2 in.	+18
2 1/2 to 2 3/4 in.	37	1 3/4 to 1 7/8 in.	+ 8
3 in.	40	2 to 2 1/2 in.	— 2
3 1/4 to 3 3/4 in.	42 1/2	2 1/2 to 3 in.	— 7
4 to 13 in.	46	3 1/4 to 4 1/2 in.	— 9

Beyond the above discount, 5 fives extra are given on lap welded steel tubes and 2 tens on charcoal iron tubes.

Standard Commercial Seamless Boiler Tubes
Cold Drawn

1 in.	55-58	3 and 3 1/4 in.	36-39
1 1/4 and 1 1/2 in.	47-50	3 1/2 and 3 3/4 in.	37-40
1 3/4 in.	31-34	4 in.	41-44
2 and 2 1/4 in.	22-25	4 1/2 in. and 5 in.	33-37
2 1/2 to 2 3/4 in.	32-35		

Hot Rolled

3 and 3 1/4 in.	38-41	4 in.	43-46
3 1/2 in. and 3 3/4 in.	39-42		

Less carloads, 4 points less. Add $8 per net ton for more than four gages heavier than standard. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be held at mechanical tube list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Mechanical Tubing

Carbon under 0.30 base .....85 to 87 per cent off list
Carbon 0.30 to 0.40 base .....83 to 85 per cent off list
Plus usual differentials and extra for cutting. Warehouse discounts range higher.

Seamless Locomotive and Superheater Tubes

	Cents per Ft.		Cents per Ft.
2-in. O.D. 12 gage	15	2 1/4-in. O.D. 10 gage	20
2-in. O.D. 11 gage	16	3-in. O.D. 7 gage	35
2-in. O.D. 10 gage	17	1 1/2-in. O.D. 9 gage	15
2 1/4-in. O.D. 12 gage	17	5 3/8-in. O.D. 9 gage	55
2 1/4-in. O.D. 11 gage	18	5 1/2-in. O.D. 9 gage	57

Prices of Iron and Steel Products and Raw Materials

Ores

Lake Superior Ores, Delivered Lower Lake Ports

Old range Bessemer, 55 per cent iron	$5.65
Old range non-Bessemer, 51½ per cent iron	4.90
Mesabi Bessemer, 55 per cent iron	5.40
Mesabi non-Bessemer, 51½ per cent iron	4.75

Foreign Ore, per Unit, c.i.f. Philadelphia or Baltimore

Iron ore, low phos., copper free, 55 to 58 per cent iron in dry Spanish or Algerian	9.00c. to 9.50c.
Iron ore, Swedish, average 66 per cent iron	9.50c.
Manganese ore, washed, 51 per cent manganese, from the Caucusus, nominal	42c.
Manganese ore, ordinary, 48 per cent manganese from the Caucasus	40c.
Manganese ore, Brazilian or Indian, nominal	42c.
Tungsten ore, high grade, per unit, in 60 per cent concentrates	$8.75 to $9.00
Chrome ore, basic, 48 per cent Cr_2O_3, crude, per ton, c.i.f., Atlantic seaboard	18.50 to 24.00
Molybdenum ore, 85 per cent concentrates, per lb. of MoS_2, New York	80c.

Coke and Coal

(Per Net Ton)

Furnace coke, f.o.b. Connellsville prompt	$3.50 to $3.75
Foundry coke, f.o.b. Connellsville prompt	4.25 to 5.00
Mine run steam coal, f.o.b. W. Pa. mines	1.50 to 2.10
Mine run coking coal, f.o.b. W. Pa. mines	1.75 to 1.90
Mine run gas coal, f.o.b. W. Pa. mines	2.25
Steam slack, f.o.b. W. Pa. mines	1.10 to 1.20
Gas slack, f.o.b. W. Pa. mines	1.25 to 1.35

Ferroalloys

Ferromanganese, domestic, 80 per cent, furnace, or seaboard, per ton	$115.00
Ferromanganese, foreign, 80 per cent, f.o.b. Atlantic port, duty paid	115.00
Ferrosilicon, 50 per cent, delivered	82.50 to 85.00
Ferrosilicon, 75 per cent	145.00 to 147.50
Ferrotungsten, per lb. contained metal	90c. to 95c.
Ferrochromium, 4 per cent carbon and up, 60 to 70 per cent Cr., per lb. contained Cr. delivered	11.50c.
Ferrovanadium, per lb. contained vanadium	$3.50 to $4.00
Ferrocarbontitanium, 15 to 18 per cent, per net ton	200.00

Spiegeleisen, Bessemer Ferrosilicon and Silvery Iron

(Per gross ton furnace unless otherwise stated)

Spiegeleisen, domestic, 19 to 21 per cent.....$33.00 to $34.00
Spiegeleisen, domestic, 16 to 19 per cent..... 32.00 to 33.00
Ferrosilicon, Bessemer, 10 per cent, $39.50; 11 per cent, $42; 12 per cent, $44.50; electric furnace ferrosilicon 10 to 11 per cent, $38; furnace, with an advance of $1 per unit for material above 10 per cent.
Silvery iron, 5 per cent, $27.00; 6 per cent, $28.00; 7 per cent, $29.00; 8 per cent, $30.50; 9 per cent, $32.50; 10 per cent, $34.50; 11 per cent, $37.00; 12 per cent, $39.50.

Fluxes and Refractories

Fluorspar, 80 per cent and over calcium fluoride, not over 5 per cent silica, per net ton, f.o.b. Illinois and Kentucky mines $20.00
Fluorspar, 85 per cent and over calcium fluoride, not over 5 per cent silica, per net ton f.o.b. Illinois and Kentucky mines 21.00
Fluorspar, foreign, 85 per cent calcium fluoride, not over 5 per cent silica, c.i.f. Philadelphia, duty paid, per net ton 18.00

Per 1000 f.o.b. works:

Fire Clay	High Duty	Moderate Duty
Pennsylvania	$43.00 to $46.00	$40.00 to $43.00
Maryland	48.00 to 50.00	43.00 to 45.00
Ohio	43.00 to 46.00	40.00 to 43.00
Kentucky	43.00 to 45.00	40.00 to 43.00
Illinois	43.00 to 45.00	40.00 to 43.00
Missouri	45.00 to 48.00	38.00 to 43.00
Ground fire clay, per ton		6.50 to 7.50
Silica Brick:		
Pennsylvania		40.00
Chicago		49.00
Birmingham		54.00
Silica clay, per ton		8.00 to 9.00
Magnesite Brick:		
Standard size, per net ton (f.o.b. Baltimore and Chester, Pa.)		65.00
Grain magnesite, per net ton (f.o.b. Baltimore and Chester, Pa.)		40.00
Chrome Brick:		
Standard size, per net ton		48.00

Bolts and Nuts

Machine bolts, small rolled threads...60 and 10 per cent off list
Machine bolts, all sizes, cut threads
50, 10 and 10 per cent off list
Carriage bolts, smaller and shorter, rolled threads
50, 10 and 10 per cent off list
Carriage bolts, cut threads, all sizes..50 and 10 per cent off list
Eagle carriage bolts.....65 and 10 per cent off list
Lag bolts .....60, 10 and 10 per cent off list
Plow bolts, Nos. 1, 2 and 3 heads....50 and 10 per cent off list
Other style heads .....20 per cent extra
Machine bolts, c.p.c. and t. nuts, ⅝ x 4 in.
45, 10 and 5 per cent off list
Larger and longer sizes.....45, 10 and 5 per cent off list
Hot-pressed nuts, blank or tapped, square.....4c. off list
Hot-pressed nuts, blank or tapped, hexagons....4.40c. off list
C.p.c. and t. square or hex. nuts, blank or tapped..4.10c. off list
Semi-finished hex. nuts.:
⅞ in. and smaller, U. S. S.....80, 10 and 5 per cent off list
⅞ in. and larger, U. S. S.....75, 10 and 5 per cent off list
Small sizes, S. A. E.....80, 10, 10 and 5 per cent off list
S. A. E., ⅝ in. and larger....75, 10, 10 and 5 per cent off list
Stove bolts in packages.....80 and 5 per cent off list
Stove bolts in bulk.....80 and 5 and 2½ per cent off list
Tire bolts .....50, 10 and 5 per cent off list
Bolt ends with hot pressed nuts..50, 10 and 10 per cent off list
Bolt ends with cold pressed nuts...45, 10 and 5 per cent off list
Washers .....6c. to 8.50c. off list

The foregoing are delivered prices for 1000 lb. or over, except on stove and tire bolts on which a full freight allowance is made on 300 lb. or over, for shipment within established zone limits, buyers outside of the zone paying the additional freight. Washers and lock washers are quoted f.o.b. Chicago and Pittsburgh.

Semi-Finished Castellated and Slotted Nuts

(Prices delivered within specified territories)
(To jobbers and consumers in large quantities)

	Per 100 Net S. A. E.	Per 100 Net U. S. S.		Per 100 Net S. A. E.	Per 100 Net U. S. S.
¼-in.	$0.44	$0.44	⅞-in.	$2.35	$2.40
5/16-in.	.515	.515	⅞-in.	3.60	3.60
⅜-in.	.62	.66	1-in.	5.55	5.80
7/16-in.	.79	.90	1⅛-in.	8.90	8.90
½-in.	1.01	1.05	1¼-in.	12.60	13.10
9/16-in.	1.38	1.42	1⅜-in.	18.35	18.35
⅝-in.	1.70	1.73	1½-in.	21.00	21.00

Larger sizes—Prices on application.

Cap and Set Screws

(Freight allowed within zone limits)

Milled cap screws.....80, 10 and 5 per cent off list
Milled standard set screws, case hardened
80 and 10 per cent off list
Milled headless set screws, cut thread..80 and 10 per cent off list
Upset hex. head cap screws, U. S. S. thread
8, 10, 10 and 5 per cent off list
Upset hex. cap screws, S. A. E. thread
8, 10, 10 and 5 per cent off list
Upset set screws.....80, 10 and 10 per cent off list
Milled studs .....75 per cent off list

Semi-Finished Steel, f.o.b. Pittsburgh or Youngstown, per gross ton

Rolling billets, Bessemer, 4-in. and over	$37.00
Rolling billets, open-hearth, 4-in. and over	38.00
Forging billets, ordinary carbon	42.50 to 45.00
Sheet bars, Bessemer	38.00
Sheet bars, open-hearth	38.00
Slabs	37.00 to 38.00
*Wire rods, common soft, base, No. 5 to ⅜-in.	48.00 to 50.00
Wire rods, common soft, coarser than ⅜-in.	$2.50 over base
Wire rods, screw stock	$5.00 per ton over base
Wire rods, carbon 0.20 to 0.40	3.00 per ton over base
Wire rods, carbon 0.41 to 0.55	5.00 per ton over base
Wire rods, carbon 0.56 to 0.75	7.50 per ton over base
Wire rods, carbon over 0.75	10.00 per ton over base
Wire rods, acid	15.00 per ton over base
Skelp, grooved, per lb.	2.10c.
Skelp, sheared, per lb.	2.10c.
Skelp, universal, per lb.	2.10c.

*Chicago mill base is $50 to $52. Cleveland mill base, $48 to $50.

Alloy Steel

(F.o.b. Pittsburgh or mill)

S. A. E. Series Numbers	Bars 100 lb.
2100*(¼% Nickel, 10 to 20 per cent Carbon)	$3.00 to $3.25
2300 (3½% Nickel)	4.75
2500 (5% Nickel)	6.25 to 6.50
3100 (Nickel Chromium)	3.65
3200 (Nickel Chromium)	5.50
3300 (Nickel Chromium)	7.50 to 7.75
3400 (Nickel Chromium)	6.50 to 6.75
5100 (Chromium Steel)	3.50
5200*(Chromium Steel)	7.50 to 8.00
6100 (Chromium Vanadium bars)	4.35
6100 (Chromium Vanadium spring steel)	4.25
9250 (Silicon Manganese spring steel)	3.50
Carbon Vanadium (0.45 to 0.55 Carbon, 0.15 Vanadium)	4c.
Nickel Chrome Vanadium (0.60 Nickel, 0.50 Chromium, 0.15 Vanadium)	4.50
Chromium Molybdenum bars (0.80—1.10 Chromium, 0.25—0.40 Molybdenum)	4.35
Chromium Molybdenum bars (0.50—0.70 Chromium, 0.15—0.25 Molybdenum)	3.75
Chromium Molybdenum spring steel (1—1.25 Chromium, 0.30—0.50 Molybdenum)	4.75 to 5.00

Above prices are for hot-rolled steel bars, forging quality. The ordinary differential for cold drawn bars is 1c. per lb. higher. For billets 4 x 4 to 10 x 10-in. the price for a gross ton is the net price for bars of the same analysis. For billets under 4 x 4-in. down to and including 2½-in. squares, the price is $5 a gross ton above the 4 x 4 billet price.

*Not S.A.E. specifications, but numbered by manufacturers to conform to S. A. E. system.

PERSONAL

A. C. Cook was elected vice-president at the recent annual meeting of the Warner & Swasey Co., Cleveland, being promoted from general sales manager, which position he has held for the past ten years. He was also elected a member of the board of directors. Mr. Cook entered the employ of the company 24 years ago and has served as district manager of the New York territory and has represented his company abroad on three extended trips to Europe. At the annual meeting the Warner & Swasey Co. presented E. P. Burrell, director of engineering, and William J. Burger, works manager, with gold watches. This was in accordance with a custom established some years ago to show recognition to men who have been in continuous service of the company for 25 years.

A. C. COOK

C. L. Goodrich has returned to the Pratt & Whitney Co., Hartford, Conn., as assistant to the general manager. He was formerly connected with the company for many years, during which he was active in its gage business. He left the company to become acting general manager of the Bement works in Philadelphia. Mr. Goodrich has been recalled to resume his work on gages and to take charge of special work.

O. K. Carpenter, who has been with Eastern Steel Castings, Newark, N. J., since its beginning, has become general manager of the Blackwood Electric Steel Corporation, Parkersburg, W. Va. Mr. Carpenter started in the steel foundry at the Ohio Foundry Co., Lima, Ohio, in 1909. In 1913 he went to the Bayonne Steel Castings, Bayonne, N. J., which he left in 1918, to go to the Reading Steel Casting Co. After a year there, he returned to Bayonne in the sales department, but soon became superintendent of the Millbury Steel Foundry, Millbury, Mass. Later he was superintendent of the New England Steel Castings Co. at Springfield, Mass. Mr. Carpenter returned to the Bayonne Steel Castings in 1921 as general superintendent. When this company was reorganized as Eastern Steel Castings, he moved to Newark, and as foundry engineer of the new company was in charge of putting the plant in operation.

R. A. Williamson, general manager of the Oberlin Machinery Co., Oberlin, Ohio, has taken over and moved to Oberlin the business and equipment of the Parker Arbor Co., Ann Arbor, Mich., maker of an improved type of three-jawed tooth-sleeved drill chuck. Gorham C. Parker, for many years with the Jacobs Mfg. Co., Hartford, Conn., and later president of the Parker Arbor Co., has joined the Oberlin organization as sales director. B. L. Morgan, one-time superintendent of the Perry-Fay Co., Elyria, Ohio, and later superintendent of the Parker Arbor Co., has been retained as superintendent of the Oberlin Machinery Co.

Ernst Krause, president Ernst Krause & Co., Vienna and Berlin, is in this country introducing a new European machine tool combining the functions of a shaper, drill press, milling machine and lathe. He is making headquarters at the offices of F. W. Jaeger, 140 Liberty Street, New York.

Thomas F. Macksey, for many years associated with Dickson & Eddy, New York, as sales manager, has joined the sales force of the Eastern Fuel Co. R. M. Hires also has joined the Eastern Fuel Co. organization, working out of the Philadelphia office.

Edward Ver Linden has been elected president, general manager and a director of the Peerless Motor Car Co., Cleveland. He succeeds D. A. Burke, who accepted the presidency of the company in 1923 with the understanding that he would remain at its head only temporarily. Mr. Ver Linden was formerly superintendent of the Detroit plant of the American Radiator Co. and later vice-president and superintendent of the Michigan Auto Parts Co., and factory manager of the Buick Motor Co. From 1912 to 1921 he was connected with the Olds Motor Works Co., Lansing, Mich., starting as works manager and becoming president. Later he had charge of the construction of the Durant automobile plant at Lansing, Mich.

R. D. Perry, who has been president and general manager of the Perry-Fay Co., Elyria, Ohio, manufacturer of screw machine products, since its organization in 1906, has retired from the active management of the company and has been succeeded by his son, R. D. Perry, Jr., as general manager, and by E. F. Allen as president. Mr. Perry remains on the board of directors.

Benjamin A. Patch, for several years a member of the sales force of Hickman, Williams & Co., at Chicago, has been transferred to the company's Cincinnati office. John H. Abbott, formerly with the general sales department of the Illinois Steel Co., Chicago, has joined the Chicago sales force of Hickman, Williams & Co.

Harry S. Smith has been appointed sales representative in Chicago for the McMaster-Carr Supply Co., 174 North Market Street, Chicago, in the sale of railroad and shop supplies, including bolts and nuts, rivets, pipe, fittings, shovels, etc.

Stanhope Boal, president Favorite Stove & Range Co., Piqua, Ohio, with which he has been identified during the past 52 years, has resigned from active duty and will become chairman of the board of directors. He will be succeeded by J. A. Underwood.

A. F. Dohn, who has been with the Atlas Steel Corporation since 1916, first as sales manager, then as vice-president and general manager, was elected president at a directors' meeting held Feb. 6, at which the new name, Atlas Alloy Steel Corporation, Dunkirk, N. Y., was adopted in place of Atlas Steel Corporation. Prior to 1916 Mr. Dohn was in business for himself, for one year selling machinery and steel, and as buyer for export houses. Before that he was with the Buffalo Gasoline Motor Co. 14 years, rising to the position of vice-president. H. E. Nichols, vice-president and treasurer of the new Atlas company, was treasurer in 1918 of the old Atlas Crucible Steel Corporation, having previously been with the Niagara Falls Power Co. Frank B. Lounsberry is vice-president and metallurgist. He has been with the Atlas company since 1916, having come from the Halcomb Steel Co., Syracuse, N. Y. W. D. Myers, secretary, was formerly with the Electric Alloy Steel Co. and the Brier Hill Steel Co. Assistant Treasurer Walter Bould was formerly with the Cyclops Steel Co. Charles P. Burgess is assistant to President Dohn.

A. F. DOHN

G. H. Feltes, one of the organizers of the United States Electrical Tool Co., Cincinnati, which he helped establish in 1905, has sold his interest in the company to J. A. Smith, who went into business with him. Mr. Feltes was secretary and treasurer until 1920, when he was appointed treasurer and sales manager.

Roy Welsh, secretary to President James A. Campbell of the Youngstown Sheet & Tube Co., has been

elected an assistant treasurer. Walter Meub, secretary of the company, is another assistant treasurer.

A. B. Ambler has been appointed Pacific Coast representative for Clayton Mark & Co., Chicago, manufacturers of wrought steel pipe and well supplies. Mr. Ambler personally will handle sales in San Francisco territory. Sales in the Los Angeles territory will be handled through his office under the direction of A. E. Garnjost and in Seattle territory through his office in charge of P. L. Francis.

E. R. Kenner, formerly assistant sales manager of the Wellman-Seaver-Morgan Co., Cleveland, has been appointed special representative of the H. K. Ferguson Co., Cleveland, engineer and builder. Mr. Kenner is a graduate of the Georgia School of Technology, having received a degree of Bachelor of Science in mechanical and hydraulic engineering. He acted as district representative for the Allis-Chalmers Mfg. Co., Milwaukee, for six years. Later he was chief engineer of the Firestone Tire & Rubber Co., Akron, Ohio, leaving that position for service with the Government during the war. Following the war he became associated with the Wellman - Seaver - Morgan Co.

E. R. KENNER

James F. Twohy, railroad contractor of Seattle, Wash., has been elected a vice-president of the Pacific Car & Foundry Co., that city.

A. F. Chamberlain, for the past 11 years New York manager of the Robbins & Myers Co., manufacturer of electrical fans and motors, has resigned to become associated with the Harrison S. Colburn Co., New York, specialists in waterfront and industrial real estate on the Atlantic tidewater.

William B. Schiller, president National Tube Co., Pittsburgh, accompanied by Mrs. Schiller, is enjoying a Mediterranean cruise and will return in April.

E. W. Mudge, president Reliance Coke & Furnace Co., Pittsburgh, and Theodore Friend, treasurer Clinton Iron & Steel Co., Pittsburgh, were in a party that sailed Feb. 14, for a two-month's European trip.

Peter Stewart, for the past seven years superintendent of the South works, American Steel & Wire Co., at Worcester, Mass., has been made superintendent of the North works, succeeding J. Lester Perry, recently promoted to assistant district manager of the Worcester district, of which Clinton S. Marshall is district manager. Edward H. Pierce, superintendent of the New Haven works, was appointed superintendent of the South works, and M. W. Reade succeeds Mr. Pierce at New Haven. Mr. Stewart is one of the veterans of the Worcester district, having been with the business since boyhood. Previous to his appointment as superintendent of the South works in 1918, he was assistant to superintendent. Mr. Pierce before going to New Haven was head of the company's physical laboratory in Worcester. Mr. Reade has been connected with the New Haven plant several years, and previously held several positions of importance in the Worcester works.

Dr. Richard Moldenke, Watchung, N. J., has returned from a European trip.

E. V. Crane, of the E. W. Bliss Co., Brooklyn, N. Y., is to address the Providence Engineering Society, Providence, R. I., on the evening of Feb. 20, on the subject "The Place of the Power Press in Industry."

William R. Hopkins, attorney and city manager of Cleveland, was elected president of the Niagara Falls Smelting & Refining Corporation, Buffalo, at the recent annual meeting. Ernest G. Jarvis was elected vice-president and general manager; Howard O. Babcock, secretary; A. G. Maddigan, treasurer; and these with Paul A. Schoellkopf, president Niagara Falls Power Co., constitute the board of directors.

Samuel B. Whinery, 95 Liberty Street, New York, will represent the Aurora Pump & Mfg. Co., manufacturer of centrifugal pumps, Aurora, Ill., for both the New York and Philadelphia territory.

J. W. Hildebrand, formerly connected with the Jones Foundry & Equipment Co., Chicago, has joined the sales force of Foote Brothers Gear & Machine Co., Chicago, as sales engineer.

O. J. Crowe has resigned as director of purchases of the C. R. Wilson Body Co., Detroit, to accept a similar position with the American Body Co., Buffalo. He has been in the automobile industry for the last 15 years.

Purity of Oxygen Discussed

The results of experiments intended to determine the effect of various degrees of purity of oxygen on the consumption of the gas in cutting work and also on the time required for cutting were presented by John J. Crowe, engineer in charge of apparatus, research and development departments of the Air Reduction Sales Co., New York, at a meeting of the Metropolitan section of the American Welding Society, held at the Engineering Societies Building, New York, Feb. 16.

The experiments were on forged steel billets and plates of various thicknesses. One set of curves, shown by lantern slides, pictured the effect of the reduction in pressure required as the purity of the gas increased, and another set showed the effect of purity on the consumption of gas in cutting one linear foot of material of various thicknesses. The comparisons were for the most part between oxygen ranging in purity from 99.5 to 97.5 per cent. Sketches comparing the characteristic drag obtained on a 12-in. billet were shown, the drag being less with the high purity gas. Other curves pictured the saving in operating time, as well as in gas consumption, by the use of oxygen of high purity.

The higher purity oxygen, 99.5 per cent, was said, in general, to show a 10 per cent saving in gas consumption and 11.2 per cent saving in time as compared with the 99 per cent oxygen, and much greater savings as compared with gas which is 98.5 per cent pure and less.

In the discussion following the presentation of Mr. Crowe's paper, C. O. Carter, Linde Air Products Co., New York, said that the results of tests made by his company since 1911 are not quite in accord with those presented by Mr. Crowe. He doubted that there is any such appreciable difference between the efficiency obtained by oxygen of 99 and 99.5 per cent purity. It was stated by Mr. Carter that in the usual field operation, the handling of the process is not on a laboratory basis and that tests conducted by railroad and industrial organizations using oxygen of even greater range of purity do not show differences of plus or minus 5 per cent. Even considering the accuracy of the data, to the best of our knowledge, he said, all commercial oxygen sold today is of 99 per cent or better purity.

A simple method by which users of oxygen can test the purity of the gas was demonstrated by F. P. Gross, Jr., also of the Air Reduction Sales Co., the high purity oxygen testing apparatus of Eimer & Amend, New York, being used. Various interesting effects of liquid oxygen were shown by G. Van Alstyne, also of the Air Reduction company.

The ninth annual sales convention of the General Fireproofing Co. began Feb. 12 at the home offices in Youngstown, with dealers and sales representatives attending from all sections of the country. The program included inspection of the company's plant, equipment and product, explanation of manufacturing processes by engineers and sales discussions.

Scrap sold by the Illinois Central Railroad during 1924 brought in a revenue of more than $3,500,000, according to the *Illinois Central Magazine*. The assembling of scrap and waste materials by the road requires the use of more than 4500 cars a year.

OBITUARY

HENRY W. HOYT, past president of the National Founders' Association and also active in the affairs of the National Metal Trades Association, died at his home in Pasadena, Cal., Jan. 30. Following his graduation from the University of Wisconsin, Mr. Hoyt was associated for a number of years with the *Weekly and Daily Democrat* at Madison, Wis. Subsequently he went to Chicago and became joint proprietor with Philetus W. Gates of the old Galt House, which occupied the present site of the Chicago & North Western passenger terminal. In 1887, with Mr. Gates, he purchased the Gates Iron Works, Chicago, from Mr. Gates' father. He was secretary and general manager of this company until 1901, when it became a part of the Allis-Chalmers Mfg. Co., which was organized at that time. He remained second vice-president of the Allis-Chalmers company for about four years and then became associated with the Great Lakes Engineering Co., Detroit, of which he was secretary and a director until his retirement in 1920. He also was interested in the Hanna Engineering Works, Chicago, having become identified with the organization in 1905. Mr. Hoyt was fourth president of the National Founders' Association, serving during the years 1900 and 1901. He had lived in Pasadena since his retirement and had been ill for two years, finally succumbing to a stroke of paralysis.

H. W. HOYT

ALEXANDER D. MACGILL, for many years vice-president and a director of the Crane Co., Chicago, died at his home in that city, Feb. 12, at the age of 82. He was the oldest employee in point of service of the Crane Co. He was born in Greenock, near Glasgow, Scotland, and at the age of 19 was the youngest station master on the Glasgow & South Western Railroad. He emigrated to America at 22 and joined the Crane Co. four years later. In five years he had become a director. He was made treasurer in 1905 and vice-president in 1914. His son, Robert, is manager of the Indianapolis branch of the Crane Co.

HUGH J. ARMSTRONG, president Armstrong Brothers Tool Co., Chicago, died Jan. 26, in that city, after a brief illness.

THOMAS B. RYBOLT, director and active in the management of the Rybolt Heater Co., Ashland, Ohio, manufacturer of heating equipment, died at his home in East Cleveland, Ohio, Feb. 11, following a week's illness of pneumonia. He was 49 years of age.

JOHN P. BEGGS, aged 62, pioneer cast iron pipe manufacturer in the Birmingham, Ala., district, died after a very brief illness at his home in Irondale, suburb of Birmingham, on Feb. 10. He was instrumental in the starting of several soil pipe plants in Alabama.

EDISON RAY EDWARDS, head of the Edwards Gas Equipment Co., Buffalo, manufacturer of gas burning equipment, died at his home in that city Feb. 9, from shell shock sustained during the World War, while he was serving in the 203rd Ammunition Train of the Seventy-eighth Division. He was 36 years old.

EARL PORTER, aged 42, president of the National Woodworking Machinery Manufacturers' Association, died at his home in Grand Rapids, Mich., Feb. 11.

WILLIAM J. PATTERSON, president W. J. Patterson Co., Monadnock Building, San Francisco, and for several years prior to 1924 manager of the Pacific Coast and inter-mountain territory for the Midvale Steel & Ordnance Co., and the Cambria Steel Co., died Feb. 9, at his residence in San Rafael, Cal., from double pneumonia, after an illness of three weeks. Mr. Patterson entered the service of the Midvale Steel & Ordnance Co. at Philadelphia, in 1906, and soon after became manager of the Denver office. In 1909 he was transfered to Mexico City, Mexico, and was placed in charge of Mexican and Central American territory. In 1916 he was transferred to San Francisco, where he remained as manager of sales until the sale of the Midvale Steel & Ordnance Co. and the Cambria Steel Co. to the Bethlehem Steel Corporation. He then resigned and organized a company of his own with offices in San Francisco and Denver, representing several independent Eastern steel companies.

LOUIS F. MCCLERNAN, head of McClernan & Co., brokers in iron and steel, 122 South Michigan Boulevard, Chicago, died Feb. 9, at his home in that city. Mr. McClernan was born in 1874 in Richmond, Vt., and had been identified with the steel industry in the Chicago district since 1895.

HARRY A. SHIER, Pittsburgh representative of the tool steel department, Henry Disston & Sons, Philadelphia, died at his home in Crafton, Pa., Jan. 24. Mr. Shier had been connected with the Disston company for a year and previously had been associated with the Onondaga Steel Co. of Syracuse, N. Y., and the Bethlehem Steel Co.

WILLIAM H. GRINNELL, one of the founders of the Beloit Iron Works and one of the principal factors among makers of paper mill machinery, died at his home in Beloit, Wis., on Feb. 5, at the age of 83. He served as a director and vice-president until advanced age caused his retirement from active business about ten years ago.

CLAYTON H. GARVEY, aged 66, founder of the American Wire Nail Co., Covington, Ky., died at his home in Pasadena, Cal., Feb. 8, following a short illness.

MARSHALL D. FLANIGAN, assistant general manager of sales, Hillman Coal & Coke Co., Pittsburgh, died at his home in Beaver, Pa., on Feb. 15, following an illness of a few days of pneumonia. He was born in Fayette County, Pa., 49 years ago, and was engaged in railroad work with the Pittsburgh & Lake Erie Railroad and New York Central Lines until 1915, when he resigned to become associated with the Hillman Coal & Coke Co. in a sales and traffic capacity. He was an active figure in coal trade circles in Pittsburgh and Cleveland.

JOSEPH A. FRAUENHEIM, organizer and former president of the Iron City Sanitary Mfg. Co., Zelienople, Pa., died at the Pittsburgh Hospital, Feb. 11. He was born in Pittsburgh in 1875 and was graduated in 1898 from Canisius College, Buffalo. He severed his connection with the sanitary ware company in 1910 to become general manager of the Premier Staybolt Co., also at Zelienople, a position he held until a few years ago.

PROF. FREDERICK CRABTREE, head of the department of mining and metallurgical engineering, Carnegie Institute of Technology, Pittsburgh, since 1906, died at St. Petersburg, Fla., Feb. 14. Professor Crabtree was born in Bramley, York, England, Feb. 1, 1867. He attended Massachusetts Institute of Technology, graduating with the degree of bachelor of science in chemistry in 1889. He was chemist with the Illionis Steel Co. in 1889 and with the National Tube Co. from 1890 to 1900. He was superintendent of the Western Steel Co., 1900 to 1901, and later superintendent of the blast furnaces with the Colorado Fuel & Iron Co. until 1904. From 1904 to 1906 he was professor of mining and metallurgy at the Colorado College, Colorado Springs, Colo. Leaving that position he went to Pittsburgh and joined the staff of Carnegie Institute of Technology. Professor Crabtree was a member of the American Institute of Mining and Metallurgical Engineers; American Iron and Steel Institute; American Electrochemical Society; American Society for Steel Treating; Engineers' Society of Western Pennsylvania; British Iron and Steel Institute.

WHERE IRON AND STEEL WENT

Five-Eighths of Our Exports Went to American Countries—Far East Took One-Fourth

WASHINGTON, Feb. 16.—American countries outside of the United States took 63.80 per cent of the iron and steel exports from this country in 1924, according to a compilation just made by the Iron and Steel Division, Department of Commerce. The figures covering the 12 months of last year supplement those previously issued by the division, showing the destinations of exports for the 11 months of 1924, and published on page 357 of THE IRON AGE for Jan. 29.

The table shows that the exports to the American continent aggregated 1,151,943 gross tons, or 63.8 per cent of the total exports for the year, 1,805,073 tons. In 1923, exports to the American markets outside of the United States constituted 65 per cent, or 1,304,882 tons out of the total of 2,009,141 tons. Canada, taking 30.5 per cent of the total exports in 1924 as against 38 per cent in 1923, was by far the leading export market in each year. Japan ranked second, taking 15.3 per cent in 1924 against 18.1 per cent in 1923. Cuba was third and Mexico fourth.

The figures in detail are shown in the table.

Iron and Steel Exports from the United States in 1923 and 1924, with Percentage Taken by Principal Countries

Countries of Destination	1924 Gross Tons	1924 Per Cent*	1923 Gross Tons	1923 Per Cent*
Belgium	9,542	0.5	7,911	....
Denmark	613	....	1,404	....
France	2,625	....	7,115	....
Germany	1,235	....	1,498	....
Italy	22,511	1.2	2,986	....
Netherlands	2,262	....	4,967	....
Norway	3,250	....	4,096	....
Portugal	1,110	....	469	....
Spain	4,299	....	7,832	....
Sweden	701	....	2,774	....
Switzerland	248	....	1,506	....
United Kingdom	56,855	3.1	63,080	3.0
Total Europe	105,251	5.8	105,638	5.2
Argentina	55,388	3.0	53,744	2.6
Brazil	68,139	3.7	50,536	2.4
Canada	550,593	30.5	760,614	38.0
Chile	31,854	1.7	33,893	1.6
Colombia	39,288	2.1	28,562	1.4
Cuba	165,637	9.1	171,900	8.5
Dominican Republic	11,309	0.6	10,668	0.5
Guatemala	13,886	0.7	6,169	....
Honduras	7,653	....	16,911	1.0
Mexico	108,512	6.0	84,583	4.0
Panama	13,544	0.7	8,903	....
Peru	28,177	1.5	27,384	1.3
Uruguay	4,597	....	9,181	....
Venezuela	24,874	1.3	16,177	0.8
British West Indies	7,458	....	11,082	0.5
Other America	21,234	1.0	13,555	0.7
Total America	1,151,943	63.8	1,304,882	65.0
British Africa	31,367	1.7	13,264	0.6
Egypt and Palestine	1,965	....	1,088	....
Portuguese Africa	938	....	1,026	....
Total Africa and Asia	34,270	1.8	15,358	0.7
Australia	23,148	1.2	41,144	2.0
China	57,126	3.1	52,327	2.6
Hongkong	11,086	0.6	10,863	0.5
India and Ceylon	23,675	1.2	24,394	1.2
Japan	277,204	15.3	363,954	18.1
Kwantung, leased territory	17,204	0.9	18,240	1.0
New Zealand	3,230	....	3,682	....
Philippine Islands	48,909	2.7	35,049	1.7
Straits Settlements	1,973	....	3,209	....
Total Far East	463,555	25.8	552,862	27.5
All other countries	50,054	2.8	30,401	1.5
Total	1,805,073	100.0	2,009,141	100.0

*Percentages under one-half per cent are not shown.

Republic Iron & Steel Co. Earnings

Unfavorable conditions in 1924 cut the earning capacity of the Republic Iron & Steel Co. to less than one-third of that in 1923. Net profit after all charges was $1,917,936 compared with $6,252,218 the year before. Against $15 a share earned on common stock in 1923, 55c. a share was earned in 1924. After charging off 8 per cent paid on the senior stock, 1 per cent being on account of arrears, there was a deficit of $82,064. Profit and loss surplus as of Dec. 31 was $32,921,772 compared with $33,003,835 a year previous. Current assets at the close of the year were $24,951,886 with current liabilities $4,797,993. Working capital of $20,153,893 compared with $25,420,513 at the beginning of 1924 and $16,156,771 on Jan. 1, 1923. There was a decrease in holdings of cash and Government securities of $5,982,703. Shipments for the year included 476,834 tons of finished products, 141,054 tons of semi-finished and 229,180 tons of pig iron, a total of 847,068 tons, against 1,098,791 in 1923. Unfilled orders for finished and semi-finished products on Dec. 31 were 228,965 tons, against 68,955 tons at the end of 1923. Pig iron orders were 67,874 tons, against 72,956.

SLIGHT DECREASE

Production in Youngstown District Iron and Steel Plants Is Curtailed

YOUNGSTOWN, Feb. 17.—For the second successive week, steel production schedules in the Mahoning Valley show weaker tendencies. Ingot output continues at 70 per cent, with 36 of 52 independent open-hearth furnaces melting. In finishing mills, 107 of 127 sheet units are under power, a moderate gain over the preceding week. Some finishing departments are not operating a full week's schedule, however. For instance, two of the three hot strip mills of the Trumbull Steel Co. did not get under way until Tuesday.

Taken as a whole, capacity in this district is active at 85 per cent. Merchant bar mill operations this week show the loss of 14-16 in. units of the Republic Iron & Steel Co. For the first time, however, in several months, the Youngstown Sheet & Tube Co. is operating all of the 15 sheet mills at its East Youngstown property. Rebuilding of heating furnaces at this plant, which kept two mills idle at a time, has been completed.

The Falcon Tin Plate Co. is now operating seven of nine tin mills at its Canton plant, against an average until recently of only four.

Steel fabricators are maintaining the schedules of recent weeks, with indications that production will broaden in a short time, due to the larger volume of inquiry.

Of 45 blast furnaces in the district, embracing the Mahoning and Shenango Valleys, 33 are in blast; coke plants are all operating at capacity; including units of Steel Corporation subsidiaries, 64 of 82 open-hearths are melting; Bessemer plants are averaging 85 per cent, though the Republic Iron & Steel Co. and the Sheet & Tube company are maintaining such plants on a two-shift basis; blooming mills are all rolling; 24 of 26 merchant bar mills are active, some part time; two of three plate mills are in commission; 117 sheet mills, some on a part-time basis, are operating in the district, of a total of 139, including Steel Corporation subsidiary units; all skelp mills are rolling and 14 of 18 tube mills; 109 of 119 tin mills are active; strip mills are all rolling, though they are not being pushed for production; puddling mills are active at capacity, while rod, wire and nail mills are running at 85 per cent.

Alabama Production Records

Two coal records, one ore record and a steel rail output record were made by the Tennessee Coal, Iron & Railroad Co. in January. Rail production was 54,219 tons against 51,652 tons, the previous record; Edgewater coal mines produced 116,318 tons against 107,625 tons the previous high; Docena coal mines, 72,815 tons, against 71,879 tons, the best preceding performance, and the Wenonah No. 9 ore mines 39,274 tons, compared with 37,151 tons.

A Cleveland office for the sale of Lake Superior ore has been opened at 627 Union Trust Building in charge of Patrick Butler by the Stanley Mining Co., owner of the Mary Ellen mine in the Mesabi range and the Manganiferous Iron Co., operating the Louise mine in the Cuyuna range, which produces mostly manganiferous ore. The Stanley Mining Co. a year ago opened a plant for washing and jigging ore from the Mary Ellen mine. Emmet Butler, a well known Lake Superior district ore operator, is president of both companies.

SEATTLE STEEL TRADE

January a Good Month—New Prices Not Effective in Present Buying

SEATTLE, Feb. 12.—January was a very good month in the local steel trade, sales and specifications reported by representatives of Eastern steel mills being as large as in December last. However, there has been some falling off so far this month. this likely being due to the fact that jobbers' stocks have been largely replenished, and they are out of the market for the present. It is true that most of the business done in December and January was specifications against old contracts, prices on which were lower than those now being quoted by the mills. There was little new contracting.

The higher prices being quoted by the Eastern steel mills on sheets, steel bars, shapes and plates, wire products and some other lighter steel products, are not as yet cutting any figure in this market. Jobbers state there is no trouble in getting lower figures from some mills, but the advances made in the past two weeks have had the effect of firming up the local market, and have hurried in some specifications that otherwise might have been held up for a longer time.

Two of the larger Eastern steel mills have for some months refused to meet the local market on plates, shapes and bars, with the result that they have done no business. Another Eastern mill has been refusing to meet the local market on sheets and pipe, and reports it has secured almost no new business in those products for some months. In some cases, and on some products, local jobbers are quoting prices delivered to consumers that on sheets mean about 3.60c. on black, 1.75c. on plates and lower than that price at Pittsburgh mill. Jobbers seem inclined to give away the greater part of the advantage they have by reason of having replenished their stocks at prices much below those now being quoted by the mills.

For the first time in some months, there is some foreign inquiry in the market for sheets, tin plate and several other forms of steel. This is not very heavy as yet, but local houses that heretofore have done considerable foreign trade, believe that it will increase, and are now making plans to go after export trade more actively. These inquiries come mostly from Japan, Hawaii and the Philippines. As the situation on the other side gets cleared up, there is no doubt that on some products, especially sheets and tin plate, there should be considerable foreign trade.

Very little tonnage in the larger sizes of wrought iron or steel pipe is used in this district, but on merchant sizes, there is considerable sold, and demand just now is fairly active. A local representative of an Eastern mill reports he has made good sales in the past month, and is now figuring on more. The three leading jobbing houses in Seattle have their own individual connection with Eastern pipe mills, and several of these connections have been in existence for years. They buy all their needs of pipe from the same source, and the arrangement is said to be very satisfactory to both parties. Jobbers have bought heavily of pipe lately, and are accumulating large stocks in the belief that they will have an active demand this summer. Prices are firm, and are nearly entirely those put in effect by the Eastern pipe mills in April, 1923.

Report of Bethlehem Pension Plan for 1924

In the second annual report of the Pension Plan for Subsidiary Companies of the Bethlehem Steel Corporation, 895 active pension cases are shown as of Dec. 31, 1924, 240 new cases having been added during the year and 84 cases discontinued, 76 due to death and eight withdrawn by the pension board.

The total amount of money paid to pensioners during the year was $358,804. This sum represents about 1/3 per cent of the total payroll for 1924. In 50 cases the monthly pension awards exceeded $50, and in 13 cases were more than $75 per month. Pensions were brought up to the minimum of $15 per month in four cases. Among the applicants granted pensions in 1924 was Jacob Peterson of the Cambria plant. He has a service record of 60 years, having been employed continuously in one department.

Summary of Pension Cases

	No. of Cases	Average Age	Average Years Service	Average Monthly Amount
Active pensions Dec. 31, 1923	739	65.56	35.50	$34.09
Pensions added in 1924	240	65.79	36.14	38.67
Total	979	65.61	35.67	$36.31
Pensions discontinued in 1924	84	67.34	35.30	35.40
Active pensions Dec. 31, 1924	895	65.46	35.70	36.42
Total amount of pensions paid during 1923				$254,675.46
Total amount of pensions paid during 1924				358,803.60

Earnings of Truscon Steel Co.

Net earnings of the Truscon Steel Co., Youngstown, from 1924 operations, after all charges, were $908,278, or, after preferred dividends, $1.80 per share on 422,920 shares of $10 par value common stock. President Julius Kahn states these earnings are about two-thirds those of the previous year, when the company reported $1,378,823, after depreciation and preferred dividends, but before Federal taxes. Gross business declined in 1924 to $21,369,038 from $22,105,148. Last year 220,000 tons of fabricated steel products were produced. Expenditures of $437,403 were made for additional land and buildings at the Youngstown plant and $312,891 for machinery and equipment. Its Japanese subsidiary retrieved in 1924 the losses incurred by the earthquake of the previous year. Current assets were 3.4 times current liabilities at the end of 1924. Surplus of $243,029 was added, bringing that item to $2,232,378.

Hot Blast for Furnaces of 1828

T. B. Neilson of Glasgow, Scotland, invented a hot-blast system for use in smelting iron in 1828. At that time the blast furnaces of Scotland were producing about 30,000 tons per year of pig iron and the average price was some £7 per ton. Commenting on this, *Engineer* (London), in its issue of Feb. 3, 1865, referred to in a recent number under the title "Sixty Years Ago," noted that the Scotch output of pig iron had exceeded 1,160,000 tons in 1864, while the price had fallen to an average of £2 17s. 3d. Much of the increase in supply and reduction in cost was ascribed to Mr. Neilson.

Exports to Cuba

Cuban imports from the United States in 1923 are reported at $181,717,272, or 67½ per cent of the total Cuban imports, amounting to $268,951,106. Of the total imports from the United States, iron and steel accounted for $15,213,909; copper and alloys, $1,777,441; other metals, $380,844. Cotton far outranked the metals, with $20,190,222; chemical products accounted for $6,663,327; wood and manufactures, $4,675,900. Machinery aggregated $19,295,413; automobiles and other vehicles, $9,223,950; leather manufactures, $9,068,450.

The A. M. Byers Co., Pittsburgh, has extended a plan of group insurance to employees at its Girard works in Trumbull county, Ohio, benefiting general workers, supervisory employees, foremen, clerks and others. The plan provides for a welfare program, in addition to insurance, in which the covering company and the welfare department of the Byers company cooperate. The company pays the premium for all employees who have been in its service 25 years or longer, while there is a nominal charge for others.

VARIED VIEWS

Some Youngstown Manufacturers More Optimistic Than Others—Scrap Declines

YOUNGSTOWN, Feb. 17.—Reports of current steel business, especially in finished lines, present some contrary aspects. A number of executives believe business is showing moderate improvement and are preparing to enlarge production, while others say the market in rolled steel is spotty and they look for no immediate change. Second quarter buying, soon to develop, will serve to test recently advanced prices, it is generally acknowledged by both makers and consumers.

President James A. Campbell of the Youngstown Sheet & Tube Co. states the past month has brought a distinct betterment in the demand for lap-welded pipe and for oil country tubular products. He points out that some weakness which has developed in the sheet steel market is most noticeable in full finished lines.

The hot strip market has shown signs of raggedness lately, and for the first time in more than two months schedules are slipping.

Fabricators of light structural steel report improvement in demand, especially for buildings which will be started as soon as winter breaks. Steel is now being ordered for such construction, so that it will be ready when work starts.

Weakness still prevails in the scrap market, with heavy melting down to $19.50, at which price a number of sales have lately been made. At this price, which restores the usual differential between heavy melting and basic iron, melters are showing more interest in the market. Heretofore, with iron and heavy melting prices approximating the same figure, melters were inclined to hold purchases in check and await developments, increasing, if necessary, the iron content in the open-hearth mix as compared with scrap. Other grades of scrap are down proportionately.

WILL BUILD BAR MILL

Youngstown Sheet & Tube Co. Authorizes $2,000,000 Expenditure at Chicago Property

At a meeting last Friday, directors of the Youngstown Sheet & Tube Co., at Youngstown, authorized an appropriation of $2,000,000 for the construction of a bar mill at the Chicago property acquired from the Steel & Tube Co. of America. This appropriation is the forerunner of $6,000,000 more to be expended at the Chicago plant on extensions which will be started this year.

The new unit will roll sheet and tin plate bar and intermediate sizes of skelp. It will be installed by the Morgan Construction Co., of Worcester, Mass., with the United Engineering & Foundry Co., Pittsburgh, supplying the heavier parts. The mill will furnish semi-finished steel for the sheet and tin plate mills which are to follow at Chicago, the installation of which will probably start this year.

The company is considering other improvements at the Chicago property, which are now pending, to more fully round out its capacity. Expenditures by the Sheet & Tube company in the improvement of the Steel & Tube plants, acquired about two years ago, are already estimated at $8,000,000, making the total including those projected, about $16,000,000.

Improvements already completed or under way include the construction of a new blast furnace with a monthly capacity of 20,000 tons of pig iron, two new buttweld tube mills, rearrangement of rolling mills and harbor betterments. This work is in charge of W. C. Reilly, vice-president, who was for many years general superintendent at Youngstown.

President James A. Campbell states it is the intention to finance the extensions from earnings.

Newton Machine Tool Works Moved to Rochester

The Newton Machine Tool Works of the Consolidated Machine Tool Corporation of America, Rochester, N. Y., has been moved from Philadelphia to Rochester. The reasons given are the increased efficiency that will result from combining the organizations of these plants, and the consequent large reduction of expense by eliminating duplications. This follows the removal of the Colburn Machine Tool Works from Cleveland to Rochester, as reported in THE IRON AGE of Aug. 21, 1924, which is said to have been accomplished without any material interruptions to production and with large economies in operation. Of the five divisions of the consolidated corporation, three, the Betts, Colburn and Newton, will be located at Rochester. The Hilles & Jones Works are at Wilmington, Del., and the Modern Works at Erie, Pa.

Encouraging reports as to business conditions are given by the corporation. The working force of the Hilles & Jones Works has been added to because of increased business, particularly from plate and structural shops, and the Modern Works are said to have more business in small tools than in any similar period since the consolidation. The facilities of the Rochester Works, which cover an area of more than 18 acres, are being enlarged and the shop forces increased.

January Building Construction High

January building contracts in 36 States, amounting to $296,473,000, formed, with one exception, the highest January total in our history, being exceeded by about 1 per cent in January last year. The decrease in January from the preceding month was about 10 per cent, this falling off being general, except for New York State and Northern New Jersey and the Northwestern States. As has been the case for many months past, residential buildings formed the largest item, with $127,232,000, or 43 per cent of the total. Commercial buildings at $67,372,000 were 23 per cent, while industrial buildings were only 6 per cent, or $19,454,000. The figures are based on reports to F. W. Dodge Corporation.

Portland Cement Production in January

January production of Portland cement is reported by the Geological Survey at 8,916,000 bbl., compared with 8,788,000 bbl. in January, 1924, and with 10,435,000 bbl. in December. The current figure is the largest for January ever recorded. Shipments in January at 5,108,000 bbl. were slightly below the corresponding figure of a year ago, which was 5,210,000 bbl. In December shipments were 5,506,000 bbl. Stocks at the end of January are reported at 17,720,000 bbl., a considerable increase over the 14,155,000 bbl. of a year ago. Stocks have been accumulating rapidly since the end of October, which was the low point of the year at 6,073,000 bbl.

November wage payments of Class I railroads amounted to $236,063,123 paid to 1,788,723 employees, or an average of $132 per man. The wage bill was the lowest since June and, with the further exception of February, the lowest for any month of 1924. The number of employees was lower than in any month since July and was more than 110,000 lower than in November, 1923.

Heavy railroad shipments continuing through January brought the total loadings for four weeks ended Jan. 24 to 3,554,938 cars, compared with 3,364,647 cars in 1924 and 3,373,965 cars in 1923. These figures constitute a new high record, as only one week in any preceding January ever has reached 900,000 cars, while three weeks of the current January have been over 920,000 cars each.

NEW TRADE PUBLICATIONS

Repulsion-Induction Motors.—Wagner Electric Corporation, St. Louis. Bulletin 141 of 4 pages describes and illustrates motors of the BA type, with both vertical and horizontal axes. These motors are built in sizes from 1/12 hp. to 50 hp., and each is so wound that it may be used on two standard voltages, such as 110 and 220. These motors are single phase.

Horizontal Oil Engines.—De La Vergne Machine Co., 940 East 138th Street, New York. Bulletin 184 of 20 pages describes and illustrates type SI oil engines without air compressors and shows installation views. Details are covered both by illustrations and description and instructions are given for operating the engines. A table of dimensions, with clearances, space occupied, etc., is illustrated by diagrams.

Instantaneous Heaters.—Griscom-Russell Co., 90 West Street, New York. Leaflet describing the G-R instantaneous heater and outlining applications to industrial uses.

Material Handling for Contractors.—Barber-Greene Co., Aurora, Ill. Catalog of 24 pages showing excavators, mixers, loading and piling machines, industrial cars and various other equipment for the contractor engaged in construction of buildings, bridges, roads, sewers, etc.

Porcelain Enameling.—Porcelain Enamel & Mfg. Co., Baltimore. Four-page folder showing equipment used in enameling steel and other materials with a porcelain finish. Instructions for applying the enamels, together with items of cost, etc., are covered in a 50-page monograph by the same company.

Sand Cutting Machines for Foundries.—American Foundry Equipment Co., 366 Madison Avenue, New York. Catalog of 40 pages illustrating and describing equipment for cutting and tempering sand for use in foundries. Stress is laid upon the saving of labor and uniformity of the finished product through the use of the machine. Many illustrations are given, indicating conditions under which the machine is used and showing how it is handled under varying sets of conditions.

Oil Circuit Breakers.—General Electric Co., Schenectady, N. Y. Several types of oil circuit breakers are shown in this 32-page catalog, which goes into details of connections, suggested arrangements of apparatus and many other features of helpful character to the men in the field. The characteristics of the breakers covered in this catalog range from 7500 to 35,000 volts and from 500 to 4000 amperes. Details covering construction, operation, etc., are given and the different types and some of their details are well illustrated.

Small Tools and Supplies.—J. M. Waterston, 427 Woodward Avenue, Detroit. Catalog No. 24, 448 pages 4 x 6 in., also a supplement of 48 pages. A wide variety of tools and pattern supplies is described and illustrated, and radio supplies are included in the supplement.

Electric Equipment for Cranes.—General Electric Co., Schenectady. Bulletin No. 48732, 35 pages, describes and illustrates the company's crane motors, control equipment and brakes.

Cranes.—Byers Machine Co., Ravenna, Ohio. Booklet of 48 pages, featuring the Bear Cat, model 25, light crane with full caterpillar mounting. The illustrations show the wide range of work permitted by the several attachments provided for the machine.

Pneumatic Tools.—Independent Pneumatic Tool Co., Chicago. Repair part Catalog No. 13, 200 pages. Each part entering into the construction of Thor pneumatic tools is shown, and the interchangeability of parts from one tool to another. List prices of parts are given.

Gasoline Locomotives.—Vulcan Iron Works, Wilkes-Barre, Pa. Catalog No. 101, giving construction details and illustrating several applications of the company's gasoline locomotives with four-speed worm-gear drive, several sizes of which are available. Separate four-page leaflets describe the company's 4-ton, class B G S and 7-ton, class I G S locomotives, respectively.

Pipe Covering.—National Asbestos Mfg. Co., 163 Henderson Street, Jersey City, N. J. Booklet devoted to Pyro-Bestos, a water and fire-proof heat insulating material. It is claimed to be unaffected by any temperature up to 1100 deg. Fahr.

Traveling Cranes.—Northern Engineering Works, Detroit. Bulletin No. 301, four pages. Construction features and advantages of the "Standart-ized" trolley are briefly set forth and illustrated. A separate folder is devoted to the 5-ton crane, and another folder to air hoists, grab bucket and other cranes.

Blower for Forced Draft.—L. J. Wing Mfg. Co., 352 West Thirteenth Street, New York. Bulletin 26A, describing the type EM blower for use in burning small anthracite, screenings and slack.

Cutter and Tool Grinders.—Gallmeyer & Livingston Co., Grand Rapids, Mich. Booklet of 16 pages devoted to the Nos. 3 and 4 universal cutter and tool grinder which are duplicates except for the length of table and the longitudinal movement. Following a well-illustrated description of the machines, there are several examples of gear cutter, angle cutter and other grinding done on the machine.

Mixing Machinery.—Charles Ross & Son, 148 Classon Avenue, Brooklyn, N. Y. Booklet of 26 pages describing machinery for mixing dry pigments, colors in oils and other materials.

Polyphase Motors.—Century Electric Co., St. Louis. Leaflet illustrating component parts of the company's squirrel-cage induction polyphase motors.

Dust Collectors.—J. W. Paxson Co., Philadelphia, Pa. Folder featuring cloth screen dust collectors.

Longitudinal-Drum Boilers.—Heine Boiler Co., Inc., St. Louis. Bulletin No. 52, 35 pages, 8 x 10½ in. Details of the H-type horizontally baffled and the HC-type cross baffled longitudinal-drum boilers are described and attractively illustrated. A number of furnace arrangements are shown and the illustrations include recent installations.

Wrought Iron Pipe Card.—A. M. Byers Co., Pittsburgh. Card showing compound discounts reduced to simple discounts, which will be of considerable assistance to distributors and consumers of pipe in figuring net prices. The card covers base discounts up to 80½ per cent and the advances over list up to 40 per cent.

Fire Brick.—Botfield Refractories Co., Swanson and Clymer Streets, Philadelphia. Pocket size booklet containing helpful suggestions on fire brick construction, including method of laying fire brick for thin but firm joints; how to coat furnace walls and other fire brick construction to protect the brick and prolong its life; method of filling up holes and depressions with an inexpensive patching mixture; how to lay up single ring arches, in which any one ring or part of a fire brick can be replaced without removing other rings.

Voltage Drop Control System.—General Electric Co., Schenectady, N. Y. Bulletin Y-2041, January, 1925, has 12 pages of data covering controls for direct current motors and is particularly directed toward steel mill operations. In the diagrams showing wiring systems, three colors are used to bring out the different portions of the wiring. Charging cranes and ore bridges, subject to this form of control, are illustrated.

Slip-Proof Floors.—Norton Co., Worcester, Mass. Folder of four pages describing floors made with alundum aggregate for use in schools, hospitals and other places where it is particularly desirable to avoid slipping. The floors are said to be slip-proof even when wet and, as such, are useful under shower baths and in other places where water is likely to get on the floor.

A brief history of the Osgood Co., Marion, Ohio, is given in a 16-page booklet bearing title of "Fifty-two Years' Experience." Jason C. Osgood, Troy, N. Y., received his first letters patent in 1846, his early patents being for improvements on the common crane type of dredge then in use. His dredges were built by the Starbuck Bros. Iron Works, Troy, N. Y., which up to 1874 built more than 500 Osgood crane type dredges. Additional patents were issued in 1872, which year marks the beginning of the Osgood boom-type dredge. Ram control frictions of the band type were placed in use on Osgood dredges nine years later. In 1877 Ralph R. Osgood, a nephew of J. C. Osgood, took over the active work of the company, and in 1882 he became associated with James McNaughton of Albany, N. Y., under firm name of Osgood & McNaughton. The company was incorporated in 1883 under the name of the Osgood Dredge Co., of which Messrs. Osgood and McNaughton were president and vice-president respectively, and John K. Howe, secretary and treasurer. In 1910 the company was purchased by the Marion Shovel & Dredge Co., Marion, Ohio, and in 1914 the name of the company became as it is known today. The illustrations include a shovel used on the West Shore Railroad in 1880, a boom dredge for the State of New York, in 1881 and a dragline built in 1884. Several modern machines are also shown.

Machinery Markets and News of the Works

MORE EXPORT BUSINESS

Fiat Motor Works in Italy Take 200 Tools—German Buying Continues

Illinois Central Enters Market—Maxwell Motor Corporation Making Inquiry

ORDERS for more than 200 tools for shipment to the Fiat Motor Works in Italy constitute the outstanding activity of the week, being also among the largest transactions in machine tools for a long time.

Twelve special machines for Germany were placed in the Cincinnati district and it is understood that negotiations are pending for a large Russian order. Other shipments to Europe have included some to France.

The coming into the market of the Illinois Central for three large lathes, with 50 more items on which inquiry is expected this week, is taken as a sign that the long-awaited railroad lists are perhaps beginning to materialize.

The Maxwell Motor Corporation, Detroit, is inquiring for a number of lathes, milling machines and shapers for extensions to its Chrysler car manufacturing unit.

Nine machines, including an engine lathe, milling machine, planer and power hammer, are wanted by the Southern Hardware Co., Albuquerque, N. M.

The list of the General Electric Co., Schenectady, which included 80 spindles of drill presses, most of which have been placed, a large number of power presses and several screw machines is still before the trade.

Nineteen or 20 tools out of 26 on the list of the Andes Copper Mining Co. will, it is expected, be purchased within a few weeks.

Domestic business has been fair. Inquiry continues in good volume, but, like sales, is for the most part for single machines. January bookings of machine tools were the best for any month since March of last year. They were 18 per cent above the monthly average of 1924 and nearly 18 per cent over December, which was substantially last year's average. The index figures of the National Machine Tool Builders' Association, which are percentages of the monthly rate of new orders in the first quarter of 1920 taken as 100, are: January, 29.89; December, 25.44; November, 20.85.

New York

NEW YORK, Feb. 17.

THERE is evidently a slight turn for the better in the machine-tool market which, should the railroads join with their long expected purchases, might develop into genuine activity. The outstanding list today is apparently that of the General Electric Co., Schenectady, N. Y., reported in THE IRON AGE last week. The list originally included 80 spindles of drill presses, a larger number of power presses, 17 multiple spindle screw machines and three single spindle automatic screw machines. Most of the drill presses are understood to have been placed. The Andes Copper Mining Co., New York, recently in the market for 26 machine tools has closed on about one-fourth and will probably complete purchases within the next fortnight.

The railroads continue potential purchasers of tools with lists in hand that are in most instances inactive at present. The Lehigh Valley, Central Railroad of New Jersey and Delaware, Lackawanna & Western, all have small lists of tools to be purchased, but have not acted as yet. The New York Central, which has appeared lately as a purchaser of a few tools each week, has closed on a key-seat milling machine and a 26-in. drill press. The Fairbanks-Morse Co. has purchased a 60-in. x 36-ft. bed lathe.

German activity in purchases of machine tools is rapidly approaching the proportions of the Russian purchases that have recently featured the market here. German interests in American made machines has been principally in tools of special types, as a rule not produced in Germany. European purchases of tools here have included a fair degree of activity from France and other Continental markets.

The Renaissance Bronze & Iron Works, Inc., 3876 Park Avenue, New York, will erect a new two-story plant on Foster Avenue, Long Island City, to cost about $50,000, for which bids will soon be asked on a general contract. Oscar Goldslag, 1482 Broadway, New York, is architect.

Max L. Epstein, 327 Fenmore Street, Brooklyn, plumbing equipment and supplies, has asked bids on general contract for a four-story factory, 100 x 225 ft., at 361-71 Stagg Street, to cost about $250,000. McCarthy & Kelly, 159 Remsen Street, are architects.

The Wilkes-Casey Engineering & Contracting Co., 280 Huguenot Street, New Rochelle, N. Y., is in the market for a steam shovel, Keystone type.

The Bureau of Yards and Docks, Navy Department, Washington, will soon ask bids for a 500,000 gal. steel water tank for Guantanamo, Cuba, for which specifications are now being prepared.

The Queensland Machinery Co., 142-56 Albert Street, Brisbane, Australia, desires information and price lists of agricultural implements, small tools and engineers' equipment.

S. J. Simberg, 1133 Broadway, New York, architect, has plans for a five-story automobile service, repair and garage building, 93 x 100 ft., at 127-43 West 108th Street, to cost $200,000 with equipment.

The Davis Equipment Co., 50 Church Street, New York, has inquiries out for three small gasoline-driven hoisting engines, single drum type, for export; also, for three belt-driven air compressors, each about 350 cu. ft. capacity, operated by gasoline engines.

The Hasbrouck Flooring Co., 501 East Seventieth Street, New York, will build a hardwood mill and woodworking plant, 60 x 115 ft., at Seventh and Pierce Avenues, Long Island City, to cost approximately $100,000 with machinery.

The Legislature, State of Ceara, Brazil, has authorized the establishment of a series of trade schools in principal cities of the State, with the purchase of machine tools, shop equipment and other vocational apparatus. Fred C. Eastin, Jr., vice-consul, Department of Foreign and Domestic Commerce, Pernambuco, Brazil, has information regarding the project, also, at the office of the Department, Washington. Reference No. 158197.

The American Chamber of Commerce in France, 32 Rue Taitbout, Paris, has received an inquiry (M-2973), from a French company desiring to purchase American tractors, plows and other agricultural machinery.

The Board of Contract and Supply, City Hall, Yonkers, N. Y., James J. Mulcahey, Jr., secretary, has plans for a one-story automobile service, repair and garage building for city motor trucks and cars, 125 x 220 ft., estimated to cost $200,000 with equipment. James Watson, City Hall, is city architect.

The New York Edison Co., 130 East Fifteenth Street, New York, has filed plans for a two-story automatic power station, 27 x 100 ft., at 166-68 West Sixty-fourth Street, to cost approximately $100,000 with equipment. William Whitehall, 709 Sixth Avenue, is architect.

The Board of Water Commissioners, Fairview Water District, office of the town clerk of Greenburgh, N. Y., 19 North Broadway, Tarrytown, N. Y., is asking bids until Feb. 24, for pumping station and pumping machinery, valves and other equipment for a water supply system. The Wulff Engineering Co., National Bank Building, Tarrytown, is engineer. Harvey M. Merriman is secretary.

The Finnish Government Water Power Office, Helsingfors, Finland, is asking bids until May 1, for electric transformers, switching equipment, etc., for the Government Imatra water power station. Plans at the office of the Bureau of Foreign and Domestic Commerce, 734 Customhouse, New York.

Sigmund Solomon, 152 West Forty-second Street, New York, has had plans prepared by Gronenberg & Leuchtag, 450 Fourth Avenue, architects, for a two-story automobile service, repair and garage building, 100 x 200 ft., at 820-34 Twelfth Avenue, to cost $275,000 with equipment.

The Superintendent of Lighthouses, Staten Island, N. Y., will take bids until Feb. 24, for six motor-driven, rotary pumps, proposal 18742.

The Public Service Railway Co., Terminal Building, Newark, N. J., and the Pennsylvania Railroad Co., Jersey City, N. J., are considering plans for the installation of a steel escalator, 100 ft. long and 4 ft. wide, at the Journal Square tube station, Jersey City.

In connection with its proposed gas generating plant at Harrison, N. J., the Public Service Electric & Gas Co., Terminal Building, Newark, N. J., will build a main generator works, boiler plant, compressor house and auxiliary structures. The boiler installation will consist of four 600-hp. units, with chain grate stokers, turbine-driven forced draft fans and other equipment. The erection will be carried out by the Public Service Production Co., a subsidiary organization.

The Aeolian Co., 29 West Forty-second Street, New York, manufacturer of player pianos, talking machines, etc., will proceed with the construction of a four-story addition to its plant at Garwood, N. J., 75 x 100 ft., primarily for pipe organ manufacture, estimated to cost $200,000. It has also had plans drawn for another extension, for the player piano department.

The Brass Goods Mfg. Co., 345 Eldert Street, Brooklyn, N. Y., is inquiring for a double action, single cylinder, horizontal type air compressor, about 10 x 12-in. stroke, belt driven.

The Schleifer Automatic Cutter Co., 215-19 Newark, recently organized to manufacture cloth cutting machines, plans to manufacture by contract. An initial order has been placed but further contracts must be let to meet requirements. Max Schleifer is secretary.

The Public Service Electric Co. of New Jersey is equipping its plant at Burlington with six 600 hp. Edgemoor boilers, two 600-hp. Babcock & Wilcox boilers and two 1418-hp. cross drum Babcock & Wilcox boilers with Tracy steam purifiers.

Buffalo

BUFFALO, Feb. 16.

THE Board of Education, Telephone Building, Buffalo, has awarded a general contract to Braas Brothers, 1110 Whitney Avenue, Niagara Falls, N. Y., for its proposed two-story Peckham Vocational School, 300 x 300 ft., estimated to cost $500,000 with equipment. Charles Storer is secretary of the board.

The Depew & Lancaster Light, Power & Conduit Co., Lancaster, N. Y., is completing arrangements for the purchase of the power plant and system owned by Fred W. Young, near Gowanda, N. Y., and plans extensions, with additional transmission and other equipment.

The Fancher Furniture Co., 123 Rochester Street, Salamanca, N. Y., has awarded a general contract to Benz & Brick, Salamanca, for a four-story addition, 65 x 140 ft., to cost $100,000. E. N. Unruh, 22 East Corydon Street, Bradford, Pa., is architect. John Walrath is treasurer and manager.

The Binghamton Light, Heat & Power Co., Binghamton, N. Y., will take over the plant and system of the Owego Light & Power Co., Owego, N. Y., and plans extensions, with additional transmission and other equipment.

The Niagara Falls Smelting & Refining Corporation, Niagara and Albany Streets, Buffalo, is in the market for an alligator shear, direct motor driven, with a blade 12 to 14 in. long and of capacity for sections up to 1½ in. square. It is also inquiring for a briquetting machine to make metal bricks 12 x 5 x 5 in. or 11 x 4 x 4 in.

Manual training and vocational departments will be installed in connection with the erection of a new grade school, two stories and basement, at Ogdensburg, N. Y., to cost about $200,000. The Board of Education is receiving bids on a general contract until March 3. Albert M. Skinner, Watertown, N. Y., is architect.

Plans are under way by the Cohocton Valley Garage Corporation, Cohocton, N. Y., for the erection of a two-story and basement automobile service building to cost $50,000. A lathe, drill press, cylinder reboring machine and other equipment, all electrically operated, will be required.

M. S. Siggins, 1400 Main Street, Buffalo, operating a garage and service station, is in the market for an electrically operated air compressor, vulcanizing machine and other equipment.

The C. H. Wood Co., 216 West Jefferson Street, Syracuse, manufacturer of factory supplies, has leased 6300 sq. ft. of floor space in the Lynch Building, 407 South Clinton Street, and will remove to the new location May 1.

Philadelphia

PHILADELPHIA, Feb. 16.

DAVID WEBER & CO., Fifth and Locust Streets, Philadelphia, manufacturers of corrugated paper boxes and containers, have acquired property, 215 x 500 ft., and contemplates the erection of a new plant.

Motors, conveying and other equipment will be installed in the three-story printing plant, 130 x 135 ft., to be erected by the T. A. Bradley Co., 22 Chestnut Street, to cost $100,000. Clarence E. Wunder, 1520 Locust Street, is architect.

The Philadelphia & Reading Railroad Co., Philadelphia, has plans under way for a one-story machine, forge and blacksmith shop, 100 x 110 ft., at its repair works at Reading, Pa. Otto Herold is company architect.

Fire, Feb. 12, destroyed a portion of the plant of the John M. Melloy's Sons Co., 1419 Spring Garden Street, Philadelphia, manufacturer of tinware and metal products, with loss of about $100,000 including equipment. It is planned to rebuild.

C. M. Roswell, 1015 Chestnut Street, Philadelphia, machinery dealer, has inquiries out for one 400 to 500-kw. electric generator, d. c., engine type, with or without engine; also for one 400 to 500-hp. constant speed mill type motor, 500 volts.

The Foreign Trade Bureau, Philadelphia Commercial Museum, has received the following inquiries: (43207) from Lochhead & Moore, P. O. Box No. 66, Dar-es-Salaam, Tanganyika Territory, East Africa, desiring to get in touch with American manufacturers of electric washing machines; (43214) from Noguera y Arizpe, Casilla 3957, Santiago, Chile, wishing to get in contact with American manufacturers of machinery for the production of wooden heels, latest type equipment; (43203) from Sociedad Importadora, de Jorge Soler Vilardebo, Calle Zabala 1437, Montevideo, Uruguay, desiring to get in touch with American manufacturers of machinery for printing envelopes, using metal plates; (43205) from Ana Maria Eliett, La Soledad, Calle Recreo y La Paz frente al Mercado Publico 46-54, Barranquilla, Colombia, wishing to get in touch with American manufacturers of automobile tools, wall paper machinery, printers' tools, etc.; and (43179) from Vicente Gallo, Cartagena, Colombia, wishing to get in touch with American manufacturers of small boats of about 100 tons capacity, with facilities for about 100 passengers, gasoline-motor operated.

D. W. B. Haining, Guarantee Trust Building, Atlantic City, N. J., architect, is arranging for a new one-story plant, 200 x 300 ft., at Hammonton, N. J., for the manufacture of airplanes and parts. The owner's name is temporarily withheld.

The Reading Foundry & Supply Co., Reading, Pa., plans the erection of an addition, on which work will begin early in the spring.

C. H. Masland & Sons, Inc., Amber and Westmoreland Streets, Philadelphia, has rejected bids recently received for a three-story machine shop, 80 x 190 ft., at its woolen mill at Carlisle, Pa., and will ask new bids. A portion of the structure will be used for storage. Lockwood, Greene & Co., 100 East Forty-second Street, New York, is architect and engineer.

The Pennsylvania Power & Light Co., Allentown, Pa., has secured options on land at Hummel's Wharf, near Sun-

The Crane Market

WHILE there is apparently no increase in the volume of inquiry for overhead cranes, pending business is active and is expected to result in orders before long. Inquiry for locomotive cranes is increasing and there is evident a stronger tendency among builders to hold to the established schedule of prices. Among current overhead crane inquiries expected to close shortly is a list of the General Electric Co., Schenectady, N. Y., calling for seven 2-ton wall cranes for West Philadelphia. The 120-ton electric overhead crane for which the Phoenix Utility Co., New York, has been receiving quotations, may, according to report, be supplied by the contractor who erects the building for the Phoenix company, James O. Heyworth, Chicago, Ill. The specifications have been revised and the contractor as well as the Phoenix Utility Co. is obtaining prices on a 100-ton overhead crane and a 5-ton gantry crane. The Phoenix Utility Co. is also receiving bids on a 100-ton crane for Trinidad, Tex. The Pennsylvania Railroad, purchaser of three overhead cranes and two locomotive cranes, is in the market for a 25-ton gantry crane. Jacobs Bros., Bridgeport, Conn., are reported about to close on a used crawl-tread locomotive crane.

Among recent purchases are:

Pennsylvania Railroad, Philadelphia, three 15-ton, 79-ft. span overhead cranes from an eastern builder and two locomotive cranes, 45-ft. boom, equipped to handle clamshell buckets of 1-cu. yd. capacity.

Andes Copper Mining Co., a 25-ton locomotive crane, the second in a fortnight, from an unnamed builder.

Andean Trading Co., New York, a 20-ton, 36-in. gage locomotive crane for export to Chile, from the Browning Co.

Holly Sugar Co., Colorado Springs, Colo., recently in the market for a 20-ton locomotive crane, is understood to have closed on a used machine.

E. Ryan Co., Brooklyn, N. Y., has closed on a 25-ton electric locomotive crane with an unnamed builder.

E. Y. Sayer Engineering Co., New York, a 5-ton, 40-ft. span, hand power crane from Alfred E. Box & Co.

Public Service Production Co., Newark, N. J., a 20-ton, 42-ft. 9-in. span, hand power crane for Harrison, N. J., from Alfred E. Box & Co.

R. Hoe & Co., Dunellen, N. J., a 2-ton, 22-ft. 9-in. span, 2-motor overhead traveling crane from Alfred E. Box & Co.

Tuller Construction Co., Red Bank, N. J., a 5-ton, 27-ft. span, hand power crane and a 2-ton, 2-motor hoist from Alfred E. Box & Co.

bury, Pa., to be used in connection with a proposed steam-operated electric generating plant in this district. The company is disposing of a preferred stock issue, a portion of the proceeds to be used for expansion.

Edward W. Peters, 103 Lower Mulberry Street, Danville, Pa., has inquiries out for a quantity of 4-ply mechanical belting, rubber or canvas.

The Scranton Electric Co., Scranton, Pa., has closed negotiations for about 460 acres of land on the Susquehanna River, near Pittston, Pa., and will use a portion of the site for a new steam-operated electric generating plant, to cost in excess of $750,000, with equipment and transmission system. Duncan T. Campbell is general manager.

The School Board, 121-23 Chestnut Street, Harrisburg, Pa., is said to be planning the installation of manual training equipment in the proposed two-story John Harris High School to be erected in the Allison Hill section, estimated to cost $1,200,000, for which bids will be asked on a general contract this month. Clayton J. Lappley, Ebner Building, is architect.

The Bethlehem Furnace Co., Holland, Mich., has purchased 48 acres along the Lehigh & New England Railroad, at Bethelem, Pa., on which three units will be built this year, each to cost about $250,000, and to employ 150 men.

E. D. Ames, Scranton, Pa., and associates have plans under way for the erection of a new coal tipple and washery to cost $100,000. Transmission, conveying, hoisting and power equipment will be required.

Detroit

DETROIT, Feb. 16.

PLANS are being arranged by the Atlas Drop Forge Co., Lansing, Mich., for two one-story additions, to cost $32,000 with equipment.

The Wadsworth-Campbell Box Co., 2309 Russell Street, Detroit, manufacturer of wooden boxes and containers, has preliminary plans for a new factory at Lebanon, Tenn., to cost $75,000 with machinery. John A. Campbell is vice-president.

The Board of Education, South Haven, Mich., plans the installation of manual training equipment in its proposed high school, estimated to cost $200,000. Billingham & Cobb, Peck Building, Kalamazoo, Mich., are architects.

Moynahan & Duchene, Inc., 2658 Porter Street, Detroit, manufacturer of brass, bronze and other metal products, is rebuilding the portion of its plant recently destroyed by fire with loss of $30,000, including equipment.

Dodge Brothers, Inc., 7900 Joseph Campau Avenue, Detroit, has plans under way for a new one-story die works, 75 x 100 ft., to cost $150,000 with equipment. Smith, Hinchman & Grylls, Marquette Building, are architects.

The Murray Body Co., Bay City, Mich., has plans for expansion to double the present capacity. It is proposed to provide facilities for the employment of about 1000 additional men.

The Common Council, Grayling, Mich., is planning the installation of pumping machinery in connection with a proposed municipal waterworks, estimated to cost $40,000, for which plans will be prepared at an early date.

The Ford Motor Co., Detroit, has plans for a one and two-story addition at its local steel works, 160 x 400 ft. Albert Kahn, Marquette Building, is architect.

The Board of Education, Springwells, Mich., plans the installation of manual training equipment in its proposed two-story and basement high school estimated to cost $1,000,000, for which bids soon will be asked on a general contract. H. J. Keough, 3440 Cass Avenue, Detroit, is architect.

The Tool Salvage Co., Globe Building, Detroit, has been purchased by a group of men and will continue to recondition used tools by a patented swedging process. A small number of new tools will be bought. F. E. Price is president.

The Standard-Peninsular Brass Works, West Warren and Walton Avenues, Detroit, is planning to erect a foundry and an office building. H. R. Brownell is president.

New England

BOSTON, Feb. 16.

NEW and used machinery dealers see an improvement in inquiries. Sales, however, continue few and include only single tools. The most important new machine sold the past week was a 16-in. lathe to a Cambridge shop, and the largest used tool was a 5-ft. radial drill to a Boston concern. Business in used equipment would be better were it not that a large percentage of prospects desire to trade in old equipment at rather stiff prices.

Virtually all new inquiries deal with single tools. This condition is largely explained by the fact that New England today, from the machine tool angle, is a replacement proposition. Construction of new plants involving lists of equipment has been steadily decreasing since the war. There is today a surplus of manufacturing space in these states. To sell a machine tool for replacement first must carry the conviction that production can be increased at a lower cost, and secondly an appropriation for the purchase of the tool. The backwardness of business in this section of the country accounts for the lack of appropriations. Bids close today on air compressor equipment required by the city of Lynn, Mass.

Small tools and machine parts continue to sell freely. One of the leading New England manufacturers of taps, dies, etc., states that sales the past two months were just about equal to the total for 1924.

Work has started on a three-story, 165 x 242 ft. high school, to cost with equipment, $1,300,000, to be erected on White Street, East Boston. It will contain a machine shop.

The Lowell Electric Light Corporation, 29 Market Street, Lowell, Mass., has awarded contract for a $1,000,000 power plant addition for which turbines, pumps and other equipment are required. Stone & Webster, Inc., 147 Milk Street, Boston, are the engineers.

Brown & Poole, architects, 688 Pleasant Street, New Bedford, have completed plans for a three-story, 152 x 226 ft. high school, to contain machine and woodworking shops, to be erected by that city on County and Morgan Streets.

Motors and belting are wanted by the Ahlstrom & Enhelm Co., 33 Chickataubut Street, Dorchester, Boston, builders finish, for its two-story, 76 x 208 ft. addition. Plans are private.

Preliminary work has started on a three-story and basement, 40 x 168 ft. elementary school addition in West Roxbury, Boston, to cost $400,000. The addition will contain shops. C. Howard Walker & Sons, 120 Boylston Street, Boston, is the architect.

F. C. Hersee Co., 22 Parkman Street, Brighton, Boston, automobile tools, contemplates the erection of a one-story manufacturing plant having 15,000 sq. ft. of floor space, at Watertown, Mass. The architect has not been selected.

The Mechanics Iron Foundry Co., 38 Kemble Street, Roxbury, Boston, has awarded contract for material needed for the construction of a foundry. Edward L. Rawson, 6 Beacon Street, Boston, is the architect.

The Baldwin Brick Corporation, Providence, R. I., recently organized, has acquired property at 447 South Water Street and will remodel an existing building for the manufacture of concrete bricks and blocks. A battery of six high power presses and auxiliary machinery will be installed to develop an output of 36,000 brick per day. An electrically-operated sand-handling and conveying plant will also be installed.

The American Tube & Stamping Co., 471 Hancock Avenue, Bridgeport, Conn., has work under way on two one-story additions, 62 x 450 ft., and 62 x 160 ft., to give employment to about 300 additional men.

R. H. Doane, 162 Newbury Street, Boston, architect, has plans for a six-story automobile service, repair and garage building at Cambridge and Green Streets, Bowdoin Square, estimated to cost $1,250,000 with equipment.

The United Illuminating Co., New Haven, Conn., has acquired property at West Haven, and will have plans drawn for a one-story automatic substation.

The Bureau of Supplies and Accounts, Navy Department, Washington, will take bids until Feb. 24 for a quantity of steel shelving for the Newport Navy Yard, schedule 3318.

The Bangor & Aroostook Railroad Co., Bangor, Me., is said to be planning to rebuild the portion of its coal pockets, with conveying system and other equipment, destroyed by fire Feb. 10, with loss reported at $21,000.

The Continental Wood Screw Co., Pleasant Street, New Bedford, Mass., has plans for a two-story addition, 80 x 100 ft., to cost approximately $75,000. Leary & Walker, Timber Building, are architects.

The Cambridge Cement Stone Co., 156 Lincoln Street, Brighton, Mass., has awarded a general contract to the New England Structural Co., 200 Devonshire Street, Boston, for a one-story addition, 45 x 250 ft., to cost approximately $37,000 with equipment.

The International Silver Co., 48 State Street, Meriden, Conn., has filed plans for three additions, one to three-stories to be used as a metal casting shop, for general manufacture and as a boiler house, respectively.

Luther C. Greenleaf, 101 Tremont Street, Boston, architect, has plans for an electric light and power house at Truro, Mass., and is arranging for the early purchase of equipment, including electric generator, engine, pumping equipment, boilers, etc.

John P. Coghlin of the Coghlin Electric Co., Worcester, Mass., has plans for a four-story automobile service, repair and garage building at Commercial and Exchange Streets, to cost $500,000 with equipment.

Pittsburgh

PITTSBURGH, Feb. 16.

BIDS will soon be asked by the Mitchell Spring Co., 820 Horner Street, Johnstown, Pa., manufacturer of automobile springs, etc., for a one-story addition to cost about $25,000. Gray & Chaflin, Colonial Building, are engineers.

The Atlas Sanitary Mfg. Co., Zelienople, Pa., has awarded a general contract to the Truscon Steel Co., Oliver Building, Pittsburgh, for a one-story addition, 30 x 52 ft., estimated to cost $42,000.

The Raleigh Smokeless Coal Co., Beckley, W. Va., has acquired a controlling interest in the Lillybrook Coal Co., Lillybrook district, increasing its land holdings to about 5000 acres under development. It is proposed to install additional electric power and mining machinery to develop an output of about 1000 tons per day. John R. Hornbrook, Beckley, is general manager.

The Copper Welding Corporation, Pittsburgh, has leased a one-story foundry at 3009 Pulaski Street, Lawrenceville, near Pittsburgh, 80 x 100 ft., and will remodel for a new plant.

The Harpers Ferry Paper Co., Harpers Ferry, W. Va., will rebuild the portion of its pulp mill recently destroyed by fire with loss estimated at $50,000 including equipment.

The Board of Education, Millvale, Pa., plans the installation of manual training equipment in its two-story high school estimated to cost $200,000, for which bids are being asked on a general contract. Frank McCrooks, 541 Third Avenue, Pittsburgh, is architect.

The Cherry River Boom & Lumber Co., Scranton, Pa., is rebuilding the portion of its mills at Richwood, W. Va., destroyed by fire last December with loss of $200,000 with machinery.

The Common Council, Bolivar, W. Va., is said to be planning the installation of pumping machinery in connection with a proposed municipal waterworks.

The director of the Department of Public Supplies, Pittsburgh, has been authorized to advertise for bids and purchase an ammonia compressor, farm machinery and steel wardrobes.

The West Penn Co., West Penn Building, Pittsburgh, has disposed of a preferred stock issue of $1,500,000, a portion of the proceeds to be used for expansion in electric light and power properties.

Chicago

CHICAGO, Feb. 16.

IN an unusually quiet market, activity is confined principally to orders and inquiries for single machines. The long awaited railroad lists, however, show signs of finally materializing. The Illinois Central has entered the market for a 90-in. driving wheel lathe, a 54-in. tender truck wheel lathe, and a 90-in. driving wheel journal turning lathe, and is expected to put out inquiries for 50 additional items the current week. The Holt Mfg. Co., Peoria, Ill., has placed an order for a 4-ft. Carlton radial drill.

The following inquiry for nine machines all to be motor driven, has been received from the Southern Hardware Co., Metropolitan Building, Albuquerque, N. M.:

One double head emery stand with 14-in. wheel.
One double head 8-in. emery stand.
One 8 x 8-in. power hack saw.
One bolt machine to take up to and including 1¼-in. bolt.
One pipe-threading machine to take up to and including 8-in. pipe.
One trip-hammer, 65-lb. ram or 250-lb. pressure.
One 42 or 48-in. x 20-ft. engine lathe.
One milling machine, medium size.
One 30 x 96-in. planer.

Fire recently damaged the plant of the Fruit Growers Express Co. at East Chicago, Ind.

The Glass Novelty Co., manufacturer of wood cribs, 1915 West Nineteenth Street, Chicago, has awarded a general contract for a two-story factory, 80 x 500 ft., at 4400-18 West Twenty-sixth Street.

Miller & Hart, Inc., packer, has awarded contract for a five-story addition, 66 x 100 ft., at Forty-sixth Street and Packer Avenue, Chicago.

The Security Electric Mfg. Co., 2635 Canton Street, Chicago, has awarded a general contract to Royal L. Brooks, 815 South Cicero Avenue, for a one-story building, 50 x 125 ft., to cost $25,000. Edward A. Klamt, 713 Wrightwood Avenue, is architect.

The city clerk, Falls City, Neb., is taking bids until Feb. 25, for equipment for a municipal waterworks, including two direct-connected, motor-driven centrifugal pumps, capacity of 750 gal. and 500 gal. per min., respectively; valves, filter equipment, controllers, and accessory equipment. The Prince-Nixon Engineering Co., Omaha, Neb., is engineer.

The Nebraska Power Co., Omaha, Neb., has arranged for a bond issue of $2,000,000, a portion of the proceeds to be used for extensions and improvements in plants and system.

The City Council, Cedar Falls, Iowa, is planning to ask bids soon for the construction of an addition to the municipal electric power plant to cost $30,000. H. E. Olbrich is city clerk.

David S. Klafter, 64 West Randolph Street, Chicago, architect, has plans for a new automobile service, repair and garage building at 925 Kinzie Avenue, estimated to cost $250,000.

The Commonwealth Edison Co., 72 West Adams Street, Chicago, has arranged for an increase in capital from $100,000,000 to $125,000,000, a portion of the fund to be used for extensions and improvements in plants and system.

The Mississippi Valley Structural Steel Co., Decatur, Ill., will construct a steel warehouse, 120 x 500 ft., to cost $50,000.

The New Mexico Machine & Metal Works, recently organized, will operate a general machine and welding works at 407 West Copper Avenue, Albuquerque, N. M.

The Auto Stove Works, New Athens, Ill., will erect an addition.

The Board of Education, Rockford, Ill., plans the installation of manual training equipment in its proposed three-story Abraham Lincoln junior high school, estimated to cost $900,000, for which it is expected to ask bids on a general contract early in the summer. Peterson & Johnson, Swedish American Bank Building, are architects.

The Barrett Hardware Co., Joliet, Ill., heavy hardware products, is arranging for a two-story and basement storage and distributing plant, 130 x 150 ft., to cost approximately $100,000 with equipment. Charles W. Webster, Cutting Building, is architect.

The City Council, Sioux Falls, S. D., is considering the installation of a pumping plant on the river bank for high pressure service for fire protection.

The Clark Transfer & Storage Co., Cedar Falls, Iowa, has plans for an addition to its power house, estimated to cost $32,000 with equipment. Clark Streeter, Cedar Falls, is architect.

The Board of Education, Bloomfield, Neb., is considering the installation of manual training equipment in its proposed two-story high school, estimated to cost $110,000. E. B. Watson, 409 Norfolk Avenue, is architect.

The Owatonna Rotary Snow Plow Co., Owatonna, Minn., has been organized with capital stock of $100,000 to manufacture a new rotary snow plow. Awards will be made later for all operations. C. W. Adset is president.

Cleveland

CLEVELAND, Feb. 16.

MACHINE tool business picked up somewhat the past week after a poor start the first of the month. Both dealers and manufacturers report an increase in orders. A local company which is adding a new product to its line purchased six turret lathes and other equipment. The Maxwell Motor Car Co. is inquiring for lathes, milling machines and shapers for extensions to its Chrysler manufacturing unit and is expected to buy considerable equipment. This is the first inquiry of any size that has come from the Michigan automotive industry for several weeks. A fair amount of business in single tools is noted, also an increase in prospects. Used machinery is in steady demand with a limited supply of good milling machines and presses.

A price advance of 10 per cent has been made on the Schuchardt & Schütte line of gear hobbers.

The Kennedy Mfg. Co., Van Wert, Ohio, manufacturer of sheet metal goods, has awarded contract to the Indiana Engineering & Construction Co., Fort Wayne, Ind., for a one-story and basement factory, 100 x 100 ft.

The Alliance Clay Products Co., Alliance, Ohio, will shortly begin the erection of a $250,000 face brick and fire proofing factory, to include a machine shop. Conveying equipment will be required.

The Milton Iron Co., Jackson, Ohio, is working on plans for a foundry, 100 x 200 ft. A cupola and a 10-ton and 5-ton crane will be purchased.

The Sterling Brass Co., 9600 St. Catherine Avenue, Cleveland, is revising plans for a new factory for which bids will be taken about Feb. 25. It will be two stories and basement, 40 x 185 ft. Allen Sogg, 3030 Euclid Avenue, is the engineer.

The Miller Rubber Co., Akron, Ohio, has completed plans for two additional stories, 60 x 130 ft. to one of its factory buildings.

The Union Tank Car Co., a subsidiary of the Standard Oil Co. of Ohio, East Ohio Gas Building, Cleveland, is taking bids for a car repair shop at Toledo, Ohio.

The Fairfield Brick Co., Zoarville, Ohio, has completed plans for a factory and is in the market for conveyors.

A motor generator unit will be required for a warehouse and cold storage plant to be built by F. D. Natale, Uhrichsville, Ohio.

The Seneca Wire & Mfg. Co., Fostoria, Ohio, will build a one-story addition 190 x 200 ft.

New school projects in Ohio which call for manual training departments include the following: New Philadelphia, Ohio, junior high school, A. A. Stermer, clerk of the Board of Education; East high school, Youngstown, Ohio, Paul Boucharle, 407 Terminal Building, Youngstown, architect; high school at Harrison, Ohio, E. Haddock, clerk of the Board of Education.

The Wellman-Seaver-Morgan Co., Cleveland, has taken an order from the Illinois Steel Co. for two coke pushers and door lifting mechanisms for its Gary works.

The Ava Brick Co., Ava, Ohio, recently incorporated with a capital of $100,000 by F. J. Huff and associates, contemplates the erection of a plant. Transmission, conveying and hoisting equipment will be required.

The K. S. Machine Co., Walnut Street, Elyria, Ohio, is in the market for about $1,000 worth of small machine tools and equipment.

Cincinnati

CINCINNATI, Feb. 16.

ONE of the largest orders in some time was reported this week, involving over 200 machines for shipment to the Fiat Motor Works in Italy. What disposition was made of the tools is not known, but a local manufacturer is reported to have booked one order for 90 machines for production purposes, with a number of others for regular shop work. Also included in the order said to have been placed in this country was one item of 50 milling machines. Other machines of various types were placed, but the manufacturers participating are not known. Another important booking was from Germany for 12 machines of a highly specialized type. Negotiations are still pending for a large Russian order.

Domestic business was confined to a fairly large number of single machines. It is reported that the Illinois Central Railroad will enter the market with one of the largest railroad lists issued for some time. Generally speaking, the market is dull, though there is no lack of inquiries being figured.

The Bridgeport Machine Co., Wichita, Kan., with branch plant at Marietta, Ohio, has decided to close its plant in the latter city. It will concentrate all manufacturing activities, that of producing oil well machinery and tools, at its main plant in Wichita. J. A. Woods is president of the company.

The Gramm-Kincaid Motors, Inc., recently organized at Lima, Ohio, will manufacture trucks and has established a branch factory at Bellefontaine, Ohio, which is now in operation. Russell Kincaid and B. A. Gramm, formerly in the motor truck manufacturing business in Lima, are the heads of the new company.

Surveys are now being made at Russell, Ky., by engineers of the Chesapeake & Ohio Railroad, for extensions to the company's property in that city. Improvements planned include an addition to the machine shops and the doubling of the roundhouse facilities.

The National Steel Products Co., P. O. Box 865, Dayton, Ohio, is in the market for a Warner & Swasey No. 4 universal screw machine.

The Fischer Special Mfg. Co., 2079 Reading Road, Cincinnati, manufacturer of screw machine products, has awarded a general contract to M. Penker & Son, 123 Valencia Street, for a one-story and part basement addition, 105 x 128 ft., to cost $75,000. Teitig & Lee, Merchants' Building, are architects. F. H. Fischer is head.

The Director of Public Service, Piqua, Ohio, is asking bids until March 10 for a high service pumping station, low service pumping plant, water purification and softening plant, with complete equipment, for the municipal waterworks; also for a 1,000,000-gal. capacity steel stand pipe. William G. Clark, Spitzer Building, Toledo, Ohio, and Charles P. Hoover, 186 West Spring Street, Columbus, Ohio, are consulting engineers.

Benham & Richards, 214 East State Street, Columbus, Ohio, architects, have plans for a two-story automobile service, repair and garage building, 60 x 190 ft., estimated to cost $100,000.

The Dogan Iron & Metal Co., 134 North Spring Street, Springfield, Ohio, has awarded contract to J. C. Chapman, 2230 Columbia Avenue, for a two-story and basement building, 40 x 155 ft. Hall & Lethley, 211 North Limestone Street, are architects.

The Signal Furniture Co., Chattanooga, Tenn., recently organized with a capital of $100,000, has acquired property at East Chattanooga and plans the erection of a factory to cost $60,000. C. C. Moore, 709 Oak Street, heads the company.

The Motor Service Corporation, Fourth and Market Streets, Chattanooga, Tenn., has tentative plans for a new two-story service, repair and garage building, to cost $70,000 with equipment.

The Gem City Sheet Metal Co., Dayton, Ohio, recently reorganized, has removed to larger quarters at 1135 Germantown Street where the capacity will be increased. It will operate a department for the manufacture of radiator shields, as well as continuing its general sheet metal and roofing production. William S. Elders is president, and J. E. Ledger, secretary.

Milwaukee

MILWAUKEE, Feb. 16.

PROSPECTS for new machine-tool business are growing brighter, although sales are slow to increase. Inquiry is the most active since last summer. Improvement in the foundry situation seems now definitely established and demands from the automotive industries remain the high light in casting shop production. Railroad requirements are increasing somewhat and the agricultural implement industry is calling for materials once more, but still has some distance to go before standing out as a major factor.

The LeRoi Co., Sixtieth Avenue and Mitchell Street, West Allis, Milwaukee, manufacturer of gas engines, electric generating plants, etc., contemplates enlargements, although definite details have not been made public. It is expected to include a substantial acquisition of new production equipment. Charles W. Pendock is president and general manager.

The Seaman Body Corporation, 1732 Richards Street, Milwaukee, manufacturer of inclosed automobile bodies, is having estimates prepared for a proposed five-story addition, 100 x 400 ft., duplicating the present plant. A half interest in the concern is owned by the Nash interests, which are adding 254,236 sq. ft. to the Kenosha and Milwaukee automobile factories and investing $1,500,000 or more in new machinery. W. J. Iwer is works manager of the Seaman corporation.

The Igo Mfg. Co., Chicago, manufacturer of automobile bumpers and other metal specialties, will relocate in Kenosha, Wis., at the expiration of its present lease on May 1. A site has been selected and construction on a new plant will begin March 1. The investment is expected to be about $150,000. Thomas Igo is president and W. H. Light, secretary.

The Wirig Machine Co., Antigo, Wis., has plans for a new machine shop costing about $20,000, work to begin April 1. It does a general machine and repair business, and manufactures automobile and other vehicle springs.

The Manitowoc Ship Building Corporation, Manitowoc, Wis., has undertaken an enlargement program, largely in the direction of more dry dock facilities to handle new work as well as make repairs on the largest lake freighters. The improvements were held in abeyance until the city of Manitowoc decided to replace the Eighth Street drawbridge with a new and larger structure of the double-leaf bascule type, bids on which are now under final consideration. Changes already are being made in the crane runways for handling beams, plates and other material, and piles sunk for wider berths. L. E. Geer is president and general manager.

The Fond du Lac, Wis., Board of Education has rejected all bids for erecting two $200,000 additions to the Roosevelt junior high school and the Fond du Lac high school, but has arranged to execute the work by day labor without further delay, under the direction of Perkins, Fellows & Hamilton, architects, 814 Tower Court, Chicago. Both buildings are to be ready by Sept. 1.

Schroeder Brothers, Greenville, Wis., let the general contract to Frank Schoenrock & Sons, New London, Wis., for a two-story brick and concrete garage and service building estimated to cost $30,000 including equipment and fixtures. Work will begin March 15.

The Conder Concrete Products Corporation, Milwaukee, has been organized with 5000 shares of no-par common and $15,000 preferred stock to manufacture building blocks and materials out of cinders. The incorporators are W. M. Lewis and Lloyd E. Pitner of Racine, Wis., and Waldemar C. Wehe, attorney, 425 East Water Street, Milwaukee. A site has been acquired for a plant costing about $120,000 in Milwaukee. Later six smaller branch plants will be established in other large centers in Wisconsin.

The Highway Trailer Co., Edgerton, Wis., and its affiliated concern, the Continental Axle Co., are undertaking plant additions to enlarge the production of trailers, dump bodies, earth-boring machines, portable winches and steel trailer wheels and springs. Approximately $175,000 will be invested in new buildings and equipment, initial work on which has been started. Andrew McIntosh is president and James W. Menhall treasurer and general manager.

The Gemco Mfg. Co., 742 South Pierce Street, Milwaukee, manufacturer of garage equipment, automotive accessories, etc., contemplates a substantial enlargement of its output. This probably will call for an extension of the plant and the installation of considerable new machinery. It is employing 200 men, compared with 125 a year ago, and is operating 24 hours daily. Grant F. Disher is president and general manager.

The Husky Wrench Co., 928 Sixteenth Avenue, Milwaukee, established within the past year to manufacture automotive and industrial wrenches of the interchangeable socket type, has increased its capital stock and is arranging to enlarge its plant and production from 50 to 75 per cent. Siegmund Mandl is vice-president and chief engineer.

The Stoughton Wagon Co., Stoughton, Wis., manufacturer of freight and passenger vehicles, is installing additional equipment for the production of a new type of dump truck with mechanical hoist and steel body of 1½-yd. capacity, designed especially for highway contractors. F. J. Vea is president and general manager.

The Juneau Foundry & Boiler Works, Juneau, Wis., established in 1899 by Charles G. Brieman, has been taken over by his son, Charles G. Brieman, Jr., who has been connected with the plant for several years. The principal product is heating boilers, tanks, steel culverts and other sheet and plate commodities. Plans for increasing the output are being made.

St. Louis

ST. LOUIS, Feb. 16.

THE St. Louis Southwestern Railway Co., St. Louis, is in the market for a 2-in. bolt cutter, 1½-in. bolt cutter, combination grinder, 14-in. double emery wheel grinder, electric rivet heater for ⅝-in. rivets, No. 5 universal milling machine, 36-in. sander, 37-in. sensitive drill press and a 6-in. portable bench jointer.

Contract has been let by the Crescent Foundry Co., 2852 Lyon Street, St. Louis, to the Kremer & Viorol Co., Century Building, for a one-story foundry, 95 x 180 ft., to cost $40,000. L. W. O'Neill is president.

The Brocksmith Mfg. Co., 1860 Menard Street, St. Louis, manufacturer of automobile equipment and accessories, has completed plans for a one-story factory, 50 x 130 ft., estimated to cost $35,000.

The United States Engineer, St. Louis, will take bids until Feb. 24 for 60,000 lb. galvanized and annealed wire, and one steam pile hammer, approximate weight 7000 lb., circular 59.

The McAlester Cotton Oil Co., McAlester, Okla., has preliminary plans for rebuilding the portion of its power house and press works, recently destroyed by fire with loss of $50,000, including equipment.

The Franklin Motor Car Co., 2217 Locust Street, St. Louis, plans the establishment of a service, repair and garage in a new one-story building estimated to cost $300,000 with equipment. The Widmer Engineering Co., Laclede Gas Building, is architect and engineer.

The City Council, Enid, Okla., plans the installation of an electric-operated pumping plant in connection with its proposed waterworks estimated to cost $1,500,000, for which it will soon ask bids. Black & Veatch, Mutual Building, Kansas City, Mo., are engineers.

The Board of Education, Ellis, Kan., is considering the installation of manual training equipment in its proposed two-story and basement high school, estimated to cost $100,000, for which preliminary plans are being drawn by Robert E. Peden & Co., McLaughlin Building, Kansas City, Mo., architects.

The Gilliland Oil Co., Tulsa, Okla., is planning the construction of a new refinery at Roswell, N. M., with the installation of a pipe line through the Pecos Valley to this point, about 13 miles. It also proposes to build a refinery at Albuquerque, N. M., primarily for skimming.

The Shawnee Copper Co., Eminence, Mo., is completing plans for the erection of a new mill to cost close to $100,000. A. Wilbur is president.

The St. Louis Screw Co., Clarence and Bulwer Avenues, St. Louis, will build a two and three-story plant, 65 x 470 ft., with portion to be equipped as a foundry.

The Yard-O-Meter Corporation, 325 Locust Street, St. Louis, has acquired a building at Thirteenth and Monroe Streets, and will establish a plant for the manufacture of measuring devices and parts.

The Common Council, Morrison, Okla., is planning to purchase deep well pumping machinery and accessory equipment in connection with a waterworks system, for which bonds for $27,000 have been voted. Homer Olmsted, 2230 Eighteenth Street, Oklahoma City, Okla., is engineer.

The Denver Refrigerator & Fixture Co., 1611 Fifteenth Street, Denver, Colo., operating a woodworking and metal shop for refrigerator cases, is in the market for the various materials. R. A. Sanburn is one of the principals.

The DeHart Sheet Metal Works, Chickasha, Okla., organized to manufacture blow pipe and fittings, will build a plant and later will add other lines. It will be in the market for power equipment. E. L. DeHart heads the company.

Indiana

INDIANAPOLIS, Feb. 16.

WORK will soon begin on a one-story foundry, 50 x 120 ft., for the Weil-McLain Co., Michigan City, Ind., manufacturer of boilers, tanks, etc., for which a contract has been let to the American Bridge Co., Chicago.

Fire, Feb. 5, destroyed a portion of the plant of the Evansville Veneer Co., Evansville, Ind., with loss reported at $100,000 including equipment. It is planned to rebuild.

The Citizens' Gas Co., Indianapolis, plans the installation of coal hoisting and handling machinery, and auxiliary equipment for feeding pulverized fuel, at its Prospect plant, in connection with proposed betterments, estimated to cost $225,000. C. L. Kirk is vice-president and general manager.

The General Piston Ring Co., 701 Sand Street, Indianapolis, has abandoned plans for the present for the removal of its plant to Tipton, Ind. The company will concentrate and expand operations at the Indianapolis works. A. L. Teetor is president.

Ivar Viehe-Naess, 400 North Michigan Avenue, Chicago, architect, has preliminary plans for a two-story and basement automobile service, garage and repair building at Gary, Ind., 124 x 126 ft., to cost $140,000 with equipment.

The Kern Coal Mine, Terre Haute, Ind., operated by Harry Kern, plans the construction of a boiler plant to replace a station recently destroyed by fire; the tipple at the mine, also partially destroyed, will be rebuilt.

Fire, Feb. 7, destroyed a portion of the plant of the National Spring Co., Newcastle, Ind., manufacturer of automobile springs, etc., with loss estimated at $75,000 including equipment. It is planned to rebuild.

The Tokheim Oil Tank & Pump Co., Fort Wayne, Ind., will start immediately on the construction of a three-story addition, 75 x 135 ft., to cost $75,000.

The Martin Shock Absorber Corporation, Indianapolis, incorporated with capital stock of $200,000, will manufacture shock absorbers. Malleable castings, screw machine and other parts will be made by contract, awards for this year not yet having been made. It will be in the market for drill presses, milling machines, grinders and other equipment. Joseph J. Martin is secretary-treasurer.

South Atlantic States

BALTIMORE, Feb. 16.

PLANS are being completed by the Standard Sanitary Mfg. Co., Fifth Avenue, Canton, Baltimore, for four one-story additional plant units to cost about $50,000.

The Republic Boiler & Radiator Co., Union Avenue, Baltimore, has preliminary plans for a one-story addition, and expects to ask bids on a general contract in April.

The N. & G. Taylor Co., Cumberland, Md., manufacturer of tinplate, roofing, etc., has plans for a one-story addition, estimated to cost $500,000 with machinery. Headquarters of the company are at 300 Chestnut Street, Philadelphia.

The Denmark Machine & Foundry Co., Denmark, S. C., has acquired the local plant of the Price Foundry & Machine Co. Plans are under way for remodeling and the installation of additional machinery, including lathes, key-cutting equipment, saw mill edgers, etc. T. E. King is general manager.

The Bristol Gas & Electric Co., Bristol, Va.-Tenn., is said to be arranging an appropriation of about $125,000 for extensions in its power plant and system.

The Wrens Milling Co., Wrens, Ga., is in the market for a steel water tank and tower, about 20,000-gal. capacity.

The Sinclair Refining Co., 45 Nassau Street, New York, is reported to be planning the construction of an oil storage and distributing plant in the vicinity of Cumberland, Md., estimated to cost $100,000 with equipment.

The Kelly-Springfield Tire Co., Cumberland, Md., is arranging for a new building at its local plant to cost $250,000.

The Bureau of Supplies and Accounts, Navy Department, Washington, is taking bids until Feb. 24 for wire rope for various navy yards, schedule 3306; until March 3, for 20 motor-driven propeller type fans and 10 sets of spare parts, schedule 3312; until Feb. 24, for 144,000 ft. sounding wire for Mare Island, schedule 3305.

The Belton Light & Power Co., Belton, S. C., recently organized, has acquired the local plant and properties of the Belton Power Co., and is said to be planning extensions and the installation of additional equipment. Louis Steel, Jr., heads the purchasing company.

The Hackley Morrison Co., 1708 Lewis Street, Richmond, Va., has inquiries out for a steel derrick, 10 to 25 tons capacity; also for a jaw crusher, Champion type.

The Norman Power & Milling Co., Laurinburg, N. C., will proceed with the construction of a new power plant with initial capacity of about 450 hp., to be extended at a later date. The station will be operated under lease by D. A. Monroe.

The W. G. Jarrell Machine Co., 20 West Fourth Street, Charlotte, N. C., has awarded a general contract to the Blythe & Isenhour Co., Brevard Court, for a one-story machine shop, 50 x 150 ft., to cost $25,000. W. G. Jarrell is president and general manager.

The Dillon Supply Co., Raleigh, N. C., has inquiries out for a 100-hp. Corliss engine, with accessory equipment.

The North Carolina Granite Corporation, Mount Airy, N. C., has inquiries out for a derrick, about 15 to 25 tons capacity, with steel boom and mast, either guy or stiff-leg type; also for a hoisting engine.

The chief of engineers, United States Army, Washington, is planning to ask bids soon for a gasoline engine centrifugal pumping set.

The City Council, Asheville, N. C., is said to be planning the installation of pumping machinery and auxiliary equipment in connection with extensions in the municipal waterworks, estimated to cost $800,000.

Louis A. Tarr, Inc., Sharp and Conway Streets, Baltimore, has inquiries out for a Corliss engine, 22 x 36 in. or 24 x 36 in., heavy duty, with double eccentric.

The chief of air service, United States Army, Washington, will take bids until March 2 for miscellaneous airplane parts, circular 86, also, for gravity fuel tanks, radiator apparatus, etc., circular 88.

The Heater Well-Drilling Co., Cary, N. C., has inquiries out for a hollow spindle lathe, 6 to 8 ft. bed, with taper attachment.

The Commissioners of the District of Columbia, 509 District Building, Washington, are asking bids until March 9 for a quantity of rubber belting, fire clay, babbitt metal, oil tanks, tin plate, wheelbarrows, wire, wire fencing, belt lacing, chain, abrasives, tools, etc., class 5; also for miscellaneous electrical equipment and supplies, class 17.

The Black & Decker Mfg. Co., Towson Heights, Md., is building a one-story, 100 x 200 ft. steel and brick factory for the manufacture of portable electric tools and will install additional machinery. It will be ready for service about June 1.

Pacific Coast

SAN FRANCISCO, Feb. 11.

PLANS are being drawn by the McClintic-Marshall Co., 426 South Spring Street, Los Angeles, for a steel fabricating plant at Central Avenue and 119th Street. A crane runway, 90 x 368 ft., will be installed. It is expected to begin work in March. Orville Clark, Chapman Building, is architect. Headquarters of the company are in the Oliver Building, Pittsburgh.

The National Lead Battery Co., 1703-25 Robiyn Avenue, St. Paul, Minn., is said to be contemplating the construction of a new plant at Los Angeles, for automobile and radio service. L. J. Shields is president.

The Crown-Willamette Paper Co., 243 Battery Street, San Francisco, is planning the erection of an addition to its Floriston pulp and paper mill, near Reno, Nev., to be equipped as an evaporation unit, to cost $85,000.

The Hofius Steel & Equipment Co., Smith Building, Seattle, has awarded a general contract to the Stewart Construction Co., American Bank Building, for a one-story locomotive repair and machine shop, 60 x 220 ft.

E. B. Bergeson, 2811 Rucker Avenue, Everett, Wash., has awarded a general contract to the Everett Building Co., Powers Building, for a one-story blower pipe manufacturing plant, 50 x 120 ft.

The State Highway Commission, Forum Building, Sacramento, Cal., will soon begin the erection of a one-story repair and maintenance shop, 60 x 140 ft., for State motor trucks and cars, at San Bernardino, Cal., to cost $35,000 with equipment.

The Department of Public Service, Bureau of Power and Light, 207 South Broadway, Los Angeles, is having plans drawn for a three-story machine shop, 85 x 320 ft., to cost $160,000 with equipment.

The Vegetable Oil Mills Co., foot of Twenty-second Street, Portland, Ore., will rebuild the portion of its plant recently destroyed by fire with loss estimated at $50,000. C. A. Painton is president.

The Southern California Edison Co., Los Angeles, is arranging an appropriation of $350,000 for extensions and improvements in its plant and system during the year.

The Pacific Elevator & Equipment Co., 1129 Howard Street, San Francisco, is planning the construction of a one-story machine shop, 75 x 110 ft., adjoining the present works.

The U. S. Reamer & Tool Corporation, 3191 Casitas Avenue, Glendale, Cal., has recently been organized and is now engaged in the manufacture of a new type of reamer, which is being put on the market by the U. S. Reamer Sales Corporation, Monadnock Building, San Francisco, a subsidiary of the U. S. Reamer & Tool Corporation.

The Markey Machinery Co., Seattle, builder of the Sumner Diesel oil engines, has secured a 20-year lease of its present site, and will make some additions and improvements to its plant, considerably increasing output.

Gulf States

BIRMINGHAM, Feb. 16.

THE Texas Power & Light Co., Dallas, Tex., is disposing of a bond issue of $2,000,000, a portion of the proceeds to be used for extensions in power plants and system. A. S. Grenier is vice-president.

Samuel L. Watts, Tyler, Tex., engineer, is arranging for a new ice-manufacturing and cold storage plant at South Palestine, Tex., for the Palestine Ice & Fuel Co., to cost $45,000 with equipment.

Gould & Yates, 409 North Twenty-first Street, Birmingham, have inquiries out for machinery for the manufacture of corrugated iron roofing, etc.

The Howard Machine Shops, Beeville, Tex., have inquiries out for a cylinder grinder, piston grinding equipment and other apparatus.

The McKinney Ice & Coal Co., McKinney, Tex., will begin the erection of an addition to its ice-manufacturing plant to double the present capacity. It will cost about $45,000 with equipment.

The Town Council, Ormond, Fla., is asking bids until March 10 for equipment for a municipal waterworks, including motor-driven centrifugal pumping machinery, gasoline engine centrifugal pumping unit, electric generator of 150 hp. capacity and accessories, low pressure motor-driven air compressor, elevated steel tank, valves, etc. The Main Engineering Co., 112 Baker Street, Daytona, Fla., is engineer.

The Southwestern Power & Light Co., Fort Worth, Tex., is disposing of a bond issue of $2,000,000, a portion of the proceeds to be used for extensions in electric plants and system.

W. T. Bolton, Denton, Tex., will erect a one-story cold storage and refrigerating plant to cost $45,000 with machinery.

The Brown Detachable Disappearing Bed Co., Gloyd Building, Kansas City, Mo., is said to be considering the establishment of a branch plant at Jacksonville, Fla., primarily for assembling operations. L. A. Brown is president, in charge.

The Dothan Coffin & Casket Co., Dothan, Ala., is considering rebuilding the portion of its plant recently destroyed by fire with loss estimated at $70,000 including equipment.

The Colorado Sand & Gravel Co., Smithville, Tex., recently organized by Charles Eichenbaum, Smithville, and associates, is contemplating the establishment of a sand-mining and distributing plant and the installation of hoisting and conveying machinery, loading equipment, etc.

The Board of Aldermen, Mansura, La., will take bids until Feb. 25 for equipment for a municipal waterworks, including one 100-hp. and one 50-hp. crude oil engines, direct-connected electric alternators, two exciters, motor-driven air compressor, motor-driven centrifugal pump, 50,000-gal. elevated steel tank, etc. Plans and specifications at the office of F. P. Joseph, Glenmore, La., consulting engineer.

The Green Machinery Co., Plainview, Tex., plans the construction of a one-story shop, 50 x 100 ft. C. C. Green is one of the heads of the company.

The Texas Utilities Co., Plainview, Tex., has acquired the municipal electric plant at Canyon, Tex., and plans extensions and improvements, including the construction of an ice-manufacturing plant.

Canada

TORONTO, Feb. 16.

INTEREST in the machine tool market shows some improvement the past week. While sales have not materially increased, the general tone of the market is stronger. Inquiries for one or two tools, both new and second-hand, are fairly numerous, the latter being in stronger demand than for some time. Some small lot buying is reported from the railroads for car shop replacement and demand from the automotive industry is also becoming more active.

The Georgian Bay Shipbuilding & Wrecking Co., Midland, Ont., is in the market for a high pressure upright engine, 8 x 10 or 10 x 10, American Blower style preferred.

B. W. Kitchen, Parry Sound, Ont., is asking for a second-hand floor sander with 60-cycle motor.

The Canadian General Electric Co. (Davenport Works), 1025 Lansdowne Avenue, Toronto, is in the market for an air compressor, two-stage 1600 to 1800 cu. ft. capacity per min., with 300-hp., 25-cycle synchronous motor. One roll-over jar molding machine, and one high speed steel tempering furnace.

H. N. Brown, New Glasgow, N. S., is in the market for troughing belt conveyors, 20 to 36-in. wide, for delivery about March 15, also motors for driving. Second hand conveyors will be considered.

W. A. Adams, St. John, N. B., is asking for a 450 ⅝-in. condenser, tubes 4-ft. 1-in. long.

The Corman Engineering Co., 347 Sorauren Avenue, Toronto, is in the market for one Knight milling and drilling machine; one Pratt & Whitney die sinker and one small Becker vertical miller.

Price Brothers, Montreal, have started preliminary work on a pulp and paper mill at the Petite Decharge, on the Saguenay River, a short distance from the development work in progress for the Quebec Development Co. It is stated that the mills will have a daily output of 200 tons and cost $5,000,000.

The Oneida Community Silver Co., Niagara Falls, Ont., has started work on an addition to its plant to cost $100,000.

The Canadel Gold Mines, Ltd., Timmins, Ont., proposes to install electrically driven apparatus to replace oil burning equipment.

The American Kardex Co., Tonawanda, N. Y., manufacturer of visible record systems, has purchased a 10-acre site at Chippewa, Ont., where it proposes to build a branch factory for the British Empire market. Until the new plant is erected the company will use the building of the Niagara Falls Power Co.

The Dominion Shuttle Co., has taken over the plant and business of the Lachute Shuttle Co., Lachute Mills, Que. A new plant will be erected next spring. The company manufactures lumbering tools, handles for brooms, picks, hammers, etc.

The Monarch Battery Co., Kingston, Ont., is arranging for the erection of a manufacturing plant in the spring, 60 x 150 ft., to cost $25,000.

The City Council, Port Arthur, Ont., has passed a by-law authorizing the expenditure of $11,500 for the construction of a new pumping plant at McIntyre and McLeod Streets.

The Town Council, Port Elgin, Ont., will install two new electric pumps, one of 60 hp., for fire purposes and one of 20 hp., for domestic pumping. The present steam pump will be retained as a stand-by.

The Canadian Western Cooperage Co., Victoria, B. C., is building a factory to cost $125,000, all equipment to be electrically driven. W. W. Eastman is manager.

Hitner's Stockholders Resume Control

The creditors' committee of the Henry A. Hitner's Sons Co., Philadelphia, which has been operating the business during the past 18 months, has been dissolved and the stockholders have resumed control of affairs. At the directors' meeting officers were elected as follows: President, J. G. Hitner; vice-president, Edward L. Lupton; secretary, H. A. MacMullan; treasurer, W. Perry E. Hitner; assistant secretary-treasurer, F. R. Johnson.

Net income of the Ludlum Steel Co. for 1924 was $224,424, after all charges and reserves for Federal taxes, against $487,723 in 1923 after charges but before Federal tax reserves.

STEEL AND INDUSTRIAL STOCKS

The range of prices on active steel and industrial stocks from Monday of last week to Monday of this week was as follows:

	Low	High		Low	High
Allis-Chalmers ..	76⅝	80¼	Inland Steel.....	46⅝	49¼
Allis-Chal. pf....	106⅞	106⅞	Int. Har.....	106	107⅞
Am. B. S. & Fdy.	98	98½	Int. Har. pf.....	114¾	115¼
American Can...	165⅞	177¾	Jones & L'hlin pf.	111⅞	111⅞
Am. Can pf.....	118	118½	Lima Loco.....	68	70⅝
Am. Car & Fdy.	202	205	Nat.-Acme	6¼	6½
Am. C. & F. pf..	125	125	Nat. En. & Stm..	33⅝	34⅝
American Loco..	118¾	121⅞	Nat. En. & S. pf.	85	87
Am. Loco pf.....	121¼	123½	N. Y. Air Brake.	50⅛	53
Am. Radiator....	99¾	101¼	Otis Steel.....	10¼	10⅞
Am. Stl. Fdr.....	47	48¼	Otis Steel pf....	62	62½
Am. Stl. Fdr. pf..	109¼	110½	Pressed Steel Car	61⅞	64⅞
Baldwin Loco....	129	135⅝	Pressed Steel pf.	87½	87½
Baldwin Loco. pf.	116	116½	Replogle Steel....	19	20⅝
Bethlehem Steel..	46⅝	51½	Republic	53½	58½
Beth. Stl. 7% pf.	101	101⅝	Republic pf.....	93	94
Beth. Stl. 8% pf.	115⅝	116½	Sloss-Sheffield ...	90¼	95½
Br. Em. Steel....	3½	3½	Sloss-Sheffield pf.	96½	96½
Br. Em. Stl. 2 pf.	10⅝	10⅝	Superior Steel....	32	33
Chic. Pneu Tool.	90	92	Un. Alloy Steel..	28¼	31½
Colorado Fuel....	44¾	47⅞	U. S. Pipe.....	195⅝	250
Crucible Steel....	70⅝	74⅞	U. S. Pipe pf....	111	112
Crucible Stl. pf..	94½	95¼	U. S. Steel.....	125	128
Deere pf.....	90½	90½	U. S. Steel pf....	122	123⅞
General Electric.	235¾	245¼	Vanadium Steel..	28⅝	30¼
Gt. No. Ore Cert.	38½	39¼	W'house Air Br.	105	106
Gulf States Steel.	87½	93¾	Youngst'n S. & T.	75	76½

Industrial Finances

Net income of the Continental Can Co. for 1924, after depreciation and Federal taxes, was $4,053,325, against $3,767,730 for 1923. After preferred dividends there remained $8.10 on 450,050 shares of no par value common stock. During the year $403,967 was written off the patent and good will account against surplus.

Gross business done in 1924 by the American Locomotive Co. was $56,301,843. Net available for dividends was $6,649,507 or, after allowing preferred dividends, equal to $9.80 a share on 500,000 shares of no par value common stock. In 1923 the company earned $12,376,565 for dividends, or $21.25 a share on junior stock. The report shows unfilled orders of $12,532,462 on Jan. 31. Excess of current assets over current liabilities was $48,622,852. During the year $1,737,551 was expended for improvements.

Plans of New Companies

The Ward Universal Engine Corporation, Buffalo, has been organized to manufacture a new type of engine. Arrangements have been made for plant and machinery and the company will be in the market for raw materials soon. It also will lease out the privilege of making the engines. Temporary address is in care of Harold J. Tillou, Erie County Savings Bank Building, Buffalo.

The National Cement Block & Supply Co., incorporated with $30,000 capital stock, will operate as successor to the National Cement Block & Supply Co., 650 Lorain Street, Toledo, Ohio. It will also do a general jobbing business in builders' supplies. M. K. Johnson is secretary.

The Electrical Products Co., Insurance Exchange Building, Detroit, has been incorporated with $25,000 capital stock to act as wholesale distributor of industrial lighting equipment, having been appointed distributor by several manufacturers. A. W. Hillis is secretary-treasurer.

The Meriden Foster Merriam Co., Meriden, Conn., incorporated with $175,000 capital stock and 15,000 shares of no par common stock, has been organized to take over Foster Merriam & Co., organized in 1835 and manufacturing light grey iron castings, bronze brass and aluminum castings, casters, furniture hardware and metal specialties. H. E. Boardman is president and treasurer.

Carl W. Brown, Inc., Uncas National Bank Building, Norwich, Conn., has been organized to deal in lighting equipment, water systems, refrigerating equipment, heaters and electrical appliances.

The Bland Screen Engineering Co., 215 East Forty-sixth Street, Kansas City, Mo., has been incorporated with $90,000 capital stock to manufacture various kinds of screens. Ewing Bland heads the company.

The Mellott Furnace Co., 930 Summit Street, Toledo, Ohio, incorporated with $25,000 capital stock, is engaged in making furnaces and doing a general sheet metal business. The company buys quantities of parts and materials for building furniture. H. B. Mellott heads the company.

The Progressive Tool & Die Co. has been organized to manufacture tools, dies, jigs, fixtures and special machinery, having taken over the business of the Acme Machine Co., 2105-07 Lincoln Way, West, Mishawaka, Ind. It also designs tools. J. W. Hess is president and general manager; F. R. Smith, vice-president, and M. R. Moore, secretary-treasurer.

The S. & A. Metal Products Co., Inc., 421-27 Oneida Street, Syracuse, N. Y., has purchased the business of the Miller Metal Products, Inc., and will continue to manufacture buckets, bait pails and shears.

The Blitz Wood Products Co., Ligonier, Ind., organized to manufacture furniture, has plant area of 25,000 sq. ft. and is continually in the market for hardware, machinery, tools and packing and finishing materials, etc.

The Donovan Boiler Works, Parkersburg, W. Va., has been incorporated with $300,000 capital stock to manufacture steam boilers, locomotive type oil country portable and horizontal tubular type boilers, also storage tanks, pressure tanks, gas traps, smoke stacks and other general plate and structural work. It has taken over the plant and business of Hugh Donovan, Jr., established in 1890, and has a fully equipped plant. Mr. Donovan is president; Robert Donovan, vice-president and treasurer, and J. G. Bohn, secretary.

The Extruded Metal Products Co., Martins Ferry, Ohio, has been organized to manufacture a general line of brass, bronze and aluminum castings and also a line of extruded bronze rods, flats, shapes, etc. J. W. Millard is president.

T. L. Lawry, formerly identified with the Hyman-Michaels Co., and George H. Kuhn, who has been with the Charles Dreifus Co., Pittsburgh, are respectively president and vice-president and treasurer of the Kuhn-Lawry Co., Inc., recently organized with offices in the Bowman Building, Pittsburgh, to do a general iron and steel business.

The recently organized Lyda Machine Products Co., located in the Toledo Factories Building, Toledo, Ohio, will engage in the production of sheet metal stampings and the manufacture of press dies and equipment. It has equipment of a wide range and will be able to handle various types of work in this line. The company is under the direction of Lyman W. Close, who for the past five years has been chief engineer of the Bock Bearing Co., Toledo, and David R. Feemster, who has served the same company for about 11 years, having resigned as assistant chief engineer.

The North American Tool & Steel Corporation, Prudence Building, Forty-third Street and Madison Avenue, New York, has been organized with $100,000 capital stock and is establishing a plant at North Bergen, Jersey City, N. J., where it will manufacture cutting instruments and tool steel treated under a special process for increasing fatigue resistance. Equipment is being installed, raw materials being purchased and it expects to be on a production basis in four weeks. L. T. Haefeli is president and John M. H. Shline is vice-president and treasurer.

The annual meeting of the Marion Forged Products Co. of Marion, Ind., was held Feb. 11. This company was formerly the Western Drop Forge Co., which at that time was a subsidiary of the R. L. Dollings Co., now in the hands of a receiver. The reports showed that the plan of reorganization as worked out by Frank W. Trabold, former president, and others, has been a success. More than 200 men are now employed and a large number of orders are on hand. The board of directors is composed of Mr. Trabold, Milton Matter, Robert Batton, F. W. Davis and Mack Wilson. Mr. Wilson is president and general manager.

The Husky Wrench Co., 928 Sixteenth Avenue, Milwaukee, has increased capital stock from $50,000 to $90,000 and is adding a new line of large industrial socket wrenches.

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Current Metal Prices

On Small Lots, Delivered from Merchants' Stocks, New York City

The following quotations are made by New York City warehouses.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipments in carload lots from mills, these prices are given for their convenience.

On a number of items the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE, under the general heading of "Iron and Steel Markets" and "Non-Ferrous Metals."

Bars, Shapes and Plates

	Per Lb.
Bars:	
Refined iron bars, base price	3.24c.
Swedish charcoal iron bars, base	7.00c. to 7.25c.
Soft steel bars, base price	3.24c.
Hoops, base price	4.49c.
Bands, base price	3.99c.
Beams and channels, angles and tees, 3 in. x ¼ in. and larger, base	3.34c.
Channels, angles and tees under 3 in. x ¼ in., base	3.24c.
Steel plates, ¼ in. and heavier	3.34c.

Merchant Steel

	Per Lb.
Tire, 1½ x ½ in. and larger	3.20c.
(Smooth finish, 1 to 2½ x ¼ in. and larger)	3.55c.
Toe-calk, ⅞ x ⅜ in. and larger	4.20c.
Cold-rolled strip, soft and quarter hard	7.00c.
Open-hearth spring steel	4.50c. to 7.00c.
Shafting and Screw Stock:	
Rounds	4.15c.
Square, flats and hex	4.65c.
Standard tool steel, base price	15.00c.
Extra tool steel	18.00c.
Special tool steel	23.00c.
High-speed steel, 18 per cent tungsten	70c.

Sheets

Blue Annealed

	Per Lb.
No. 10	3.89c.
No. 12	3.94c.
No. 14	3.99c.
No. 16	4.09c.

Box Annealed—Black

	Soft Steel C. R. One Pass Per Lb.	Blued Stove Pipe Sheet Per Lb.
Nos. 18 to 20	4.45c. to 4.60c.	.....
Nos. 22 and 24	4.60c. to 4.75c.	5.25c.
No. 26	4.65c. to 4.80c.	5.30c.
No. 28*	4.75c. to 4.90c.	5.40c.
No. 30	4.85c. to 5.10c.	.....

Galvanized

	Per Lb.
No. 14	4.85c. to 5.00c.
No. 16	5.00c. to 5.15c.
Nos. 18 and 20	5.15c. to 5.30c.
Nos. 22 and 24	5.30c. to 5.45c.
No. 26	5.45c. to 5.60c.
No. 28*	5.75c. to 5.90c.
No. 30	6.25c. to 6.40c.

*No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.

Welded Pipe

Standard Steel	Black	Galv.	*Wrought Iron*	Black	Galv.
½ in. Butt...	46	29	½ in. Butt...	4	+19
¾ in. Butt...	51	37	¾ in. Butt...	11	+ 9
1-3 in. Butt..	53	39	1-1½ in. Butt.	14	+ 6
2½-6 in. Lap.	48	35	2 in. Lap.....	5	+14
7 & 8 in. Lap.	44	17	3-6 in. Lap...	11	+ 6
11&12 in. Lap.	37	12	7-12 in. Lap..	3	+16

Bolts and Screws

Machine bolts, cut thread, 45 and 10 per cent off list
Carriage bolts, cut thread,
35 to 35 and 10 per cent off list
Coach screws, 45 and 10 per cent off list
Wood screws, flat head iron,
75, 20, 10 and 5 per cent off list

Steel Wire

BASE PRICE* ON NO. 9 GAGE AND COARSER	Per Lb.
Bright, basic	4.25c. to 4.50c.
Annealed soft	4.50c. to 4.75c.
Galvanized annealed	5.15c. to 5.40c.
Coppered basic	5.15c. to 5.40c.
Tinned soft Bessemer	6.15c. to 6.40c.

*Regular extras for lighter gage.

Brass Sheet, Rod, Tube and Wire

BASE PRICE

High brass sheet	19⅝c. to 20⅝c.
High brass wire	20⅛c. to 21⅛c.
Brass rods	17⅝c. to 18⅝c.
Brass tube, brazed	27⅝c. to 28⅝c.
Brass tube, seamless	24¼c. to 25¼c.
Copper tube, seamless	25¼c. to 26¼c.

Copper Sheets

Sheet copper, hot rolled, 23c. to 24c. per lb. base.

Cold rolled, 14 oz. and heavier, 3c. per lb. advance over hot rolled.

Tin Plates

Bright Tin Grade "AAA" Charcoal 14x20	Bright Tin Grade "A" Charcoal 14x20	Coke—14 x 20	Prime	Seconds
		80 lb...	$6.15	$5.90
		90 lb...	6.30	6.05
		100 lb...	6.45	6.20
IC..	$11.25	$8.85	IC.. 6.65	6.40
IX..	12.85	10.85	IX.. 7.85	7.60
IXX..	14.40	12.55	IXX.. 9.00	8.75
IXXX..	15.75	13.85	IXXX.. 10.35	10.10
IXXXX..	17.00	15.05	IXXXX.. 11.35	11.10

Terne Plates

8 lb. coating, 14 x 20

100 lb.	$7.00 to $8.00
IC	7.25 to 8.25
IX	8.25 to 8.75
Fire door stock	9.00 to 10.00

Tin

Straits, pig	61c.
Bar	68c. to 70c.

Copper

Lake ingot	16¾c.
Electrolytic	16½c.
Casting	16 c.

Spelter and Sheet Zinc

Western spelter	9¼c.
Sheet zinc, No. 9 base, casks	12c. open 12½c.

Lead and Solder*

American pig lead	10¾c. to 11c.
Bar lead	15c.
Solder, ½ and ½ guaranteed	42c.
No. 1 solder	39½c.
Refined solder	33c.

*Prices of solder indicated by private brand vary according to composition.

Babbitt Metal

Best grade, per lb.	75c. to 90c.
Commercial grade, per lb.	35c. to 50c.
Grade D, per lb.	25c. to 35c.

Antimony

Asiatic	21c. to 22c.

Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb. ..... 36c.

Old Metals

The market is unsettled due to unsettled conditions in new metals. Dealers' buying prices are as follows:

	Cents Per Lb.
Copper, heavy crucible	12.50
Copper, heavy wire	12.25
Copper, light bottoms	10.25
Brass, heavy	7.75
Brass, light	6.25
Heavy machine composition	9.25
No. 1 yellow brass turnings	8.75
No. 1 red brass or composition turnings	9.00
Lead, heavy	7.75
Lead, tea	6.25
Zinc	4.50
Cast aluminum	17.00
Sheet aluminum	17.00